10/656,086 I

=> FILE REG
FILE 'REGISTRY' ENTERED AT 12:06:00 ON 26 JUN 2007
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.

=> D HIS

FILE 'LREGISTRY' ENTERED AT 10:57:33 ON 26 JUN 2007
L1 STR
L2 STR

FILE 'HCAPLUS' ENTERED AT 11:07:06 ON 26 JUN 2007
L3 13393 S PARK Y?/AU
L4 4087 S JUNG W?/AU OR JUNG C?/AU
L5 8181 S KIM G?/AU
L6 16 S L3 AND L4 AND L5
SEL L6 13 RN

FILE 'REGISTRY' ENTERED AT 11:08:46 ON 26 JUN 2007
L7 54 S E1-E54
L8 0 S L7 AND PMS/CI
L9 13 S L7 AND LI/ELS

FILE 'HCA' ENTERED AT 11:12:37 ON 26 JUN 2007
L10 483877 S ELECTROLY?
L11 238757 S (BATTERY OR BATTERIES OR (ELECTROCHEM? OR ELECTROLY?
OR
L12 199847 S (ORG# OR ORGANIC?)(2A)SOLVENT? OR NONAQ# OR
NONAQUEOUS?
L13 QUE L9 OR LITHIUM# OR LI OR LITHIAT?

FILE 'REGISTRY' ENTERED AT 11:17:02 ON 26 JUN 2007
L14 1 S L1
L15 SCR 1782
L16 10 S L1 AND L15
L17 2387 S L1 AND L15 FUL
SAV L17 WEI086/A

L18 50 S L2
L19 11860 S L2 FUL
SAV L19 WEI086A/A

FILE 'HCA' ENTERED AT 11:39:33 ON 26 JUN 2007
L20 8099 S L17
L21 36604 S L19
L22 132 S (L10 OR L11) AND L13 AND L20

FILE 'REGISTRY' ENTERED AT 11:40:30 ON 26 JUN 2007
L23 3 S L17 AND L7
E BENZYL SULFONE/CN
L24 1 S E3

FILE 'HCA' ENTERED AT 11:42:01 ON 26 JUN 2007
L25 3943 S L23 OR L24
L26 91 S (L10 OR L11) AND L13 AND L25
L27 5 S L26 AND L21
L28 5 S L22 AND L21

FILE 'REGISTRY' ENTERED AT 11:43:48 ON 26 JUN 2007
E AIBN/CN
L29 1 S E3

FILE 'HCA' ENTERED AT 11:46:06 ON 26 JUN 2007
L30 24698 S L29 OR AIBN OR ?AZOBISISOBUTYRONITRIL?
L31 2 S L26 AND L30
L32 3 S L22 AND L30

FILE 'LCA' ENTERED AT 11:47:04 ON 26 JUN 2007
L33 770 S POLYESTER# OR POLY(A)ESTER#
L34 172 S POLYOL# OR POLYALC# OR POLYALCOHOL## OR POLYHYDRIC?

FILE 'HCA' ENTERED AT 11:48:14 ON 26 JUN 2007
L35 17232 S L33 AND L34

FILE 'REGISTRY' ENTERED AT 11:48:23 ON 26 JUN 2007
ACT POLYOLS/A

L36 (16)SEA FILE=REGISTRY (GLYCEROL OR DIGLYCEROL OR TRIGLYCEROL

L37 (1)SEA FILE=REGISTRY 7426-71-3
L38 17 SEA FILE=REGISTRY L37 OR L36

E ACRYLIC ACID/CN
L39 1 S E3
E METHACRYLIC ACID/CN
L40 1 S E3

FILE 'HCA' ENTERED AT 11:52:36 ON 26 JUN 2007
L41 14888 S L38/D OR L38/DP
L42 31164 S L39/D OR L39/DP OR L40/D OR L40/DP
L43 694 S L41 AND L42
L44 12340 S (L10 OR L11) AND L12 AND L13
L45 66 S L44 AND (L20 OR L25)
L46 51 S L44 AND L25
L47 5 S L45 AND (L21 OR L30)
L48 3 S L45 AND L35
L49 2 S L45 AND L43
L50 6 S L27 OR L28 OR L31 OR L32 OR L47
L51 4 S L48 OR L49
L52 111105 S L38
L53 56465 S L39 OR L40
L54 2104 S L52 AND L53
L55 2 S L45 AND L54
L56 4 S L48 OR L49 OR L55
L57 36 S 1840-2002/PY,PRY AND L46
L58 33 S L57 AND L10 AND L11

FILE 'REGISTRY' ENTERED AT 12:06:00 ON 26 JUN 2007

=> D L17 QUE STAT
L1 STR

VAR G1=6/9

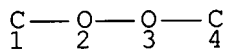
NODE ATTRIBUTES:
CONNECT IS E1 RC AT 6
CONNECT IS E1 RC AT 9
DEFAULT MLEVEL IS ATOM
GGCAT IS UNS AT 9
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 5

STEREO ATTRIBUTES: NONE
L15 SCR 1782
L17 2387 SEA FILE=REGISTRY SSS FUL L1 AND L15

100.0% PROCESSED 435892 ITERATIONS 2387 ANSWERS
SEARCH TIME: 00.00.04

=> D L19 QUE STAT
L2 STR



NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS 4

STEREO ATTRIBUTES: NONE
L19 11860 SEA FILE=REGISTRY SSS FUL L2

100.0% PROCESSED 14636 ITERATIONS 11860 ANSWERS

SEARCH TIME: 00.00.01

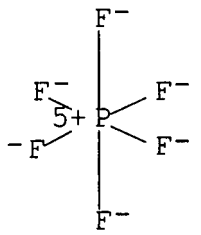
=> FILE HCA
FILE 'HCA' ENTERED AT 12:06:24 ON 26 JUN 2007

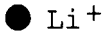
=> D L58 1-33 CBIB ABS HITSTR HITIND

L58 ANSWER 1 OF 33 HCA COPYRIGHT 2007 ACS on STN
141:159902 **Electrolyte** for **lithium** secondary **battery.** Kim, Jin-Sung; Lee, Jong-Wook; Kim, Kwang-Sik; Kim, Young-Gyu; Kim, Je-Yun; Kim, Jong-Seob (S. Korea). U.S. Pat. Appl. Publ. US 2004157133 A1 20040812, 12 pp., Cont.-in-part of U.S. Ser. No. 766,520. (English). CODEN: USXXCO. APPLICATION: US 2003-718478 20031118. PRIORITY: US 2001-766520 20010119.

AB Described is an **electrolyte** for a **lithium** secondary **battery.** The **electrolyte** includes a **nonaq.** solvent and a sulfone-based org. compd. selected from 2,5-dihydrothiophene sulfone, a cyclic sulfone with a ring size of 5 to 8, and a sulfone represented by the formula RSO3R1 (where R and R1 are independently selected from the group consisting of primary alkyl groups, secondary alkyl groups, tertiary alkyl groups, alkenyl groups, aryl groups; halogen-substituted primary alkyl groups, halogen-substituted secondary alkyl groups, halogen-substituted tertiary alkyl groups, halogen-substituted alkenyl groups, and halogen-substituted aryl groups) or a mixt. thereof.

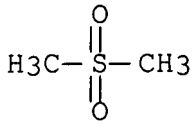
IT **21324-40-3, Lithium** hexafluorophosphate
(**electrolyte** for **lithium** secondary **battery**)
RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



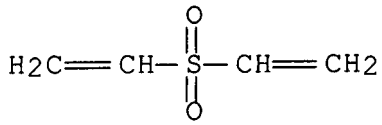


IT **67-71-0**, Methyl sulfone **77-77-0**, Vinyl sulfone
127-63-9, Phenyl sulfone **620-32-6**, Benzyl sulfone
(**electrolyte** for **lithium** secondary **battery**)

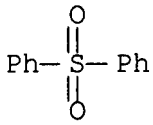
RN 67-71-0 HCA
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



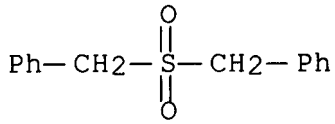
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



RN 127-63-9 HCA
CN Benzene, 1,1'-sulfonylbis- (CA INDEX NAME)



RN 620-32-6 HCA
CN Benzene, 1,1'-[sulfonylbis(methylene)]bis- (CA INDEX NAME)



IC ICM H01M010-40
ICS H01M004-58; H01M004-40
INCL 429326000; 429199000; 429332000; 429340000; 429231950; 429231800
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **electrolyte lithium** secondary **battery**
IT Composites
(carbon; **electrolyte** for **lithium** secondary **battery**)
IT **Battery electrolytes**
(**electrolyte** for **lithium** secondary **battery**)
IT Aromatic hydrocarbons, uses
(**electrolyte** for **lithium** secondary **battery**)
IT Sulfones
(**electrolyte** for **lithium** secondary **battery**)
IT Transition metal oxides
(**lithiated**; **electrolyte** for **lithium** secondary **battery**)
IT Secondary **batteries**
(**lithium**; **electrolyte** for **lithium** secondary **battery**)

IT 71-43-2, Benzene, uses 96-49-1, Ethylene carbonate 98-95-3, Nitrobenzene, uses 105-58-8, Diethyl carbonate 108-88-3, Toluene, uses 108-90-7, Chlorobenzene, uses 462-06-6, Fluorobenzene 463-79-6D, Carbonic acid, ester, cyclic 463-79-6D, Carbonic acid, linear, cyclic, uses 616-38-6, Dimethyl carbonate 623-53-0, Ethylmethyl carbonate 1330-20-7, Xylene, uses 7439-93-2, **Lithium**, uses 7440-44-0, Carbon, uses **21324-40-3**, **Lithium** hexafluorophosphate 27359-10-0, Trifluorotoluene
(**electrolyte** for **lithium** secondary **battery**)

IT **67-71-0**, Methyl sulfone **77-77-0**, Vinyl sulfone 96-48-0, γ-Butyrolactone 126-33-0, Tetramethylene sulfone **127-63-9**, Phenyl sulfone 383-29-9, 4-FluoroPhenyl sulfone **620-32-6**, Benzyl sulfone 28452-93-9, Butadiene sulfone
(**electrolyte** for **lithium** secondary **battery**)

L58 ANSWER 2 OF 33 HCA COPYRIGHT 2007 ACS on STN

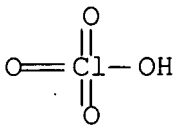
140:426121 **Electrolyte** for a **lithium** ion **battery.** Noh, Hyeong-Gon (S. Korea). U.S. Pat. Appl. Publ. US 2004101762 A1 20040527, 12 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-716812 20031118. PRIORITY: KR 2002-72475 20021120.

AB An **electrolyte** for a **lithium** secondary **battery** comprises a **nonaq. org. solvent** including 20 to 95 vol% of an ester-based or ether-based **org. solvent** based on the total amt. of **org. solvent**; **lithium** salts; and an additive compd. having at least two carbonate groups. A **lithium** secondary **battery** including this **electrolyte** has good swelling inhibition properties as well as electrochem. properties such as capacity and cycle life.

IT **7791-03-9**, **Lithium** perchlorate **10377-51-2**, **Lithium** iodide **14024-11-4**, **Lithium** tetrachloroaluminate **14283-07-9**, **Lithium** tetrafluoroborate **18424-17-4**, **Lithium** hexafluoroantimonate **21324-40-3**, **Lithium** hexafluorophosphate **29935-35-1**, **Lithium** hexafluoroarsenate **33454-82-9**, **Lithium** triflate **90076-65-6** **131651-65-5**
(**electrolyte** for **lithium** ion **battery**)

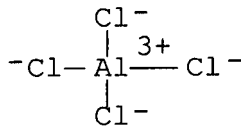
RN 7791-03-9 HCA

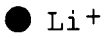
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)



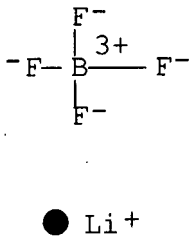
RN 10377-51-2 HCA
CN Lithium iodide (LiI) (CA INDEX NAME)

RN 14024-11-4 HCA
CN Aluminate(1-), tetrachloro-, lithium (1:1), (T-4)- (CA INDEX NAME)

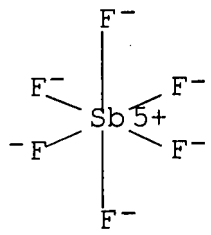




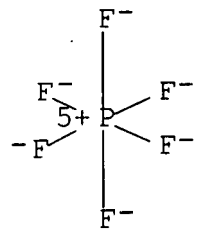
RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



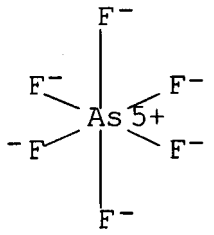
RN 18424-17-4 HCA
CN Antimonate(1-), hexafluoro-, lithium (1:1), (OC-6-11)- (CA INDEX NAME)

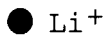


RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

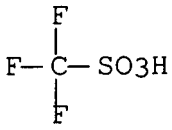


RN 29935-35-1 HCA
CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

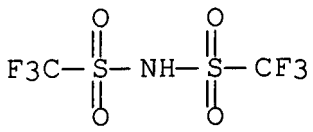




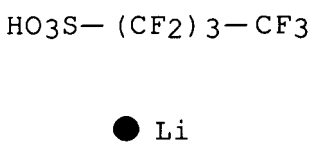
RN 33454-82-9 HCA
CN Methanesulfonic acid, 1,1,1-trifluoro-, lithium salt (1:1) (CA INDEX NAME)



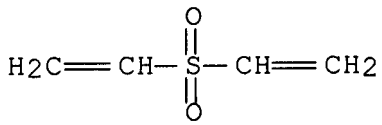
RN 90076-65-6 HCA
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:1) (CA INDEX NAME)



RN 131651-65-5 HCA
CN 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt (1:1) (CA INDEX NAME)



IT **77-77-0**, Vinyl sulfone
(**electrolyte** for **lithium** ion **battery**
)
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



IC ICM H01M010-40
INCL 429326000; 429329000; 429330000; 429331000; 429332000; 429340000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **electrolyte lithium** ion **battery**
IT **Battery electrolytes**
(**electrolyte** for **lithium** ion **battery**
)
IT Aromatic hydrocarbons, uses
Esters, uses
Ethers, uses
(**electrolyte** for **lithium** ion **battery**
)
IT Sulfones

(**electrolyte** for **lithium** ion **battery**
)
IT Swelling, physical
(inhibition; **electrolyte** for **lithium** ion **battery**)
IT Secondary **batteries**
(**lithium**; **electrolyte** for **lithium** ion **battery**)
IT 79-20-9, Methyl acetate 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-60-4, n-Propyl acetate 141-78-6, Ethyl acetate, uses 142-96-1, Dibutyl ether 462-06-6, Fluorobenzene 463-79-6D, Carbonic acid, ester 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 4437-85-8, Butylene carbonate 7439-93-2D, **Lithium**, salt 7447-41-8, **Lithium** chloride (LiCl), uses **7791-03-9**, **Lithium** perchlorate **10377-51-2**, **Lithium** iodide 12355-58-7 **14024-11-4**, **Lithium** tetrachloroaluminate **14283-07-9**, **Lithium** tetrafluoroborate **18424-17-4**, **Lithium** hexafluoroantimonate **21324-40-3**, **Lithium** hexafluorophosphate **29935-35-1**, **Lithium** hexafluoroarsenate **33454-82-9**, **Lithium** triflate 35363-40-7, Ethyl propyl carbonate, uses 56525-42-9, Methyl propyl carbonate, uses **90076-65-6** **131651-65-5**
(**electrolyte** for **lithium** ion **battery**
)
IT **77-77-0**, Vinyl sulfone 872-36-6, Vinylene carbonate 692729-49-0 692729-52-5 692729-54-7 692729-56-9
(**electrolyte** for **lithium** ion **battery**
)

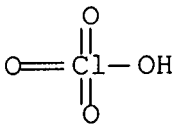
L58 ANSWER 3 OF 33 HCA COPYRIGHT 2007 ACS on STN
140:238483 **Electrolyte** for a **lithium battery**
. Park, Yong-Chul; Jung, Won-Ii; Kim, Geun-Bae; Cho, Jae-Phil; Jung, Cheol-Soo (S. Korea). U.S. Pat. Appl. Publ. US 2004048163 A1 20040311, 13 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-656086 20030905. PRIORITY: KR 2002-53879 20020906.

AB An **electrolyte** for a **lithium battery** includes a **nonaq. org. solvent**, a **lithium** salt, and an additive comprising (a) a sulfone-based compd. and (b) a C3-30 org. peroxide or azo-

based compd. The **electrolyte** may further include a poly(ester)(meth)acrylate or a polymer that is derived from a (polyester)polyol with at least three hydroxyl (-OH) groups, where a portion or all of the hydroxyl groups are substituted with a (meth)acrylic ester and the remaining hydroxyl groups that are not substituted with the (meth)acrylic ester are substituted with a group having no radical reactivity. The **lithium battery** comprising the **electrolyte** of the present invention has a significantly improved charge-discharge and cycle life characteristics, recovery capacity ratio at high temp., and swelling inhibition properties.

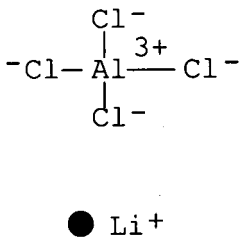
IT **7791-03-9**, **Lithium** perchlorate **10377-51-2**
, **Lithium** iodide (LiI) **14024-11-4**,
Lithium tetrachloroaluminate **14283-07-9**,
Lithium tetrafluoroborate **18424-17-4**,
Lithium hexafluoroantimonate **21324-40-3**,
Lithium hexafluorophosphate **29935-35-1**,
Lithium hexafluoroarsenate **33454-82-9**,
Lithium triflate **39300-70-4**, **Lithium**
nickel oxide **90076-65-6** **131651-65-5**,
Lithium nonafluorobutanesulfonate **162684-16-4**,
Lithium manganese nickel oxide **193215-00-8**, Cobalt
lithiummanganese nickel oxide Co0.1LiMn0.2Ni0.7O2
(**electrolyte** for **lithium battery**)

RN 7791-03-9 HCA
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)

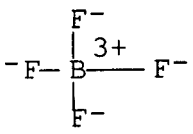


RN 10377-51-2 HCA
CN Lithium iodide (LiI) (CA INDEX NAME)

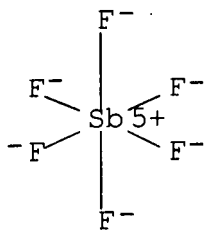
RN 14024-11-4 HCA
CN Aluminate(1-), tetrachloro-, lithium (1:1), (T-4)- (CA INDEX NAME)



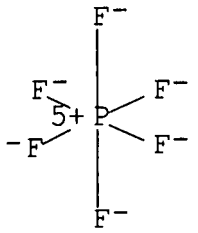
RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)

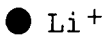


RN 18424-17-4 HCA
CN Antimonate(1-), hexafluoro-, lithium (1:1), (OC-6-11)- (CA INDEX NAME)

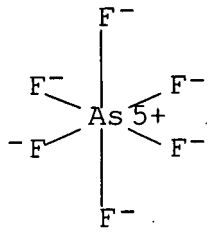


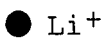
RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



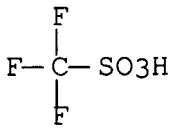


RN 29935-35-1 HCA
CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)





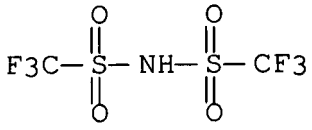
RN 33454-82-9 HCA
CN Methanesulfonic acid, 1,1,1-trifluoro-, lithium salt (1:1) (CA INDEX NAME)



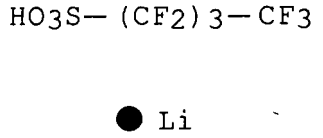
RN 39300-70-4 HCA
CN Lithium nickel oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Ni	x	7440-02-0
Li	x	7439-93-2

RN 90076-65-6 HCA
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:1) (CA INDEX NAME)



RN 131651-65-5 HCA
CN 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt (1:1) (CA INDEX NAME)



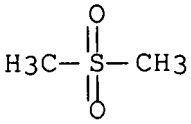
RN 162684-16-4 HCA
CN Lithium manganese nickel oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Ni	x	7440-02-0
Mn	x	7439-96-5
Li	x	7439-93-2

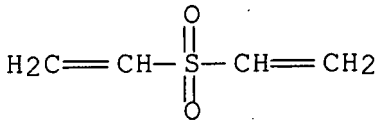
RN 193215-00-8 HCA
CN Cobalt lithium manganese nickel oxide (Co0.1LiMn0.2Ni0.7O2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.1	7440-48-4
Ni	0.7	7440-02-0
Mn	0.2	7439-96-5
Li	1	7439-93-2

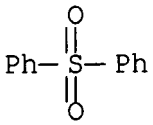
IT **67-71-0**, Methyl sulfone **77-77-0**, Vinyl sulfone **127-63-9**, Phenyl sulfone **620-32-6**, Benzyl sulfone (**electrolyte** for **lithium battery**)
RN 67-71-0 HCA
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



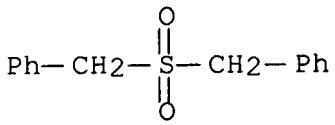
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



RN 127-63-9 HCA
CN Benzene, 1,1'-sulfonylbis- (CA INDEX NAME)



RN 620-32-6 HCA
CN Benzene, 1,1'-[sulfonylbis(methylene)]bis- (CA INDEX NAME)



IC ICM H01M010-40
INCL 429326000; 429329000; 429339000; 429340000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **lithium battery electrolyte**
IT **Battery electrolytes**
(**electrolyte** for **lithium battery**)
IT Aromatic hydrocarbons, uses
Carbonates, uses
Esters, uses
Ethers, uses
Ketones, uses
(**electrolyte** for **lithium battery**)
IT Azo compounds
(**electrolyte** for **lithium battery**)
IT Carbonaceous materials (technological products)
(**electrolyte** for **lithium battery**)
IT Sulfones
(**electrolyte** for **lithium battery**)
IT Polyesters, uses
(hydroxy-terminated; **electrolyte** for **lithium battery**)
IT Secondary **batteries**
(**lithium**; **electrolyte** for **lithium battery**)
IT Polyesters, uses
(methacrylate; **electrolyte** for **lithium battery**)
IT Peroxides, uses
(org., C3-30; **electrolyte** for **lithium battery**)
IT Esters, uses
(poly-; **electrolyte** for **lithium battery**)
IT Imides
Sulfonic acids, uses
(sulfonimides, perfluoro derivs., **lithium** salts; **electrolyte** for **lithium battery**)
IT 56-81-5, Glycerol, uses 71-43-2, Benzene, uses 96-49-1, Ethylene carbonate 98-95-3, Nitrobenzene, uses 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 108-88-3, Toluene, uses 108-90-7, Chlorobenzene, uses 149-32-6, Erythritol 462-06-6,

Fluorobenzene 616-38-6, Dimethyl carbonate 623-53-0, Methylethyl carbonate 623-96-1, Dipropyl carbonate 1330-20-7, Xylene, uses 4437-85-8, Butylene carbonate 7790-99-0, Iodine chloride (ICl) **7791-03-9, Lithium** perchlorate **10377-51-2**
, Lithium iodide (LiI) **14024-11-4,**
Lithium tetrachloroaluminate **14283-07-9,**
Lithium tetrafluoroborate **18424-17-4,**
Lithium hexafluoroantimonate **21324-40-3,**
Lithium hexafluorophosphate 27359-10-0, Trifluorotoluene **29935-35-1, Lithium** hexafluoroarsenate **33454-82-9, Lithium** triflate 35363-40-7, Ethyl propyl carbonate, uses **39300-70-4, Lithium** nickel oxide 56525-42-9, Methyl propyl carbonate, uses **90076-65-6 131651-65-5, Lithium** nonafluorobutanesulfonate **162684-16-4, Lithium** manganese nickel oxide **193215-00-8**, Cobalt lithiummanganese nickel oxide Co0.1LiMn0.2Ni0.7O2
(**electrolyte** for **lithium battery**)

IT **67-71-0**, Methyl sulfone **77-77-0**, Vinyl sulfone 78-67-1, 2,2'-Azobisisobutyronitrile 94-36-0, Benzoyl peroxide, uses 105-64-6, Diisopropyl peroxy dicarbonate 105-74-8, Lauroyl peroxide 126-33-0, Tetramethylene sulfone **127-63-9**, Phenyl sulfone **620-32-6**, Benzyl sulfone 1561-49-5, Dicyclohexylperoxy dicarbonate 1712-87-4, m-Toluoyl peroxide 3006-82-4, tert-Butylperoxy-2-ethyl hexanoate 14666-78-5 15520-11-3, Bis(4-tert-butylcyclohexyl)peroxy dicarbonate 26748-41-4 28452-93-9, Butadiene sulfone 32752-09-3, Isobutyl peroxide 92177-99-6, 3,3,5-Trimethylhexanoyl peroxide
(**electrolyte** for **lithium battery**)

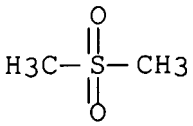
IT 79-10-7DP, Acrylic acid, reaction product with dipentaerythritol and ε-caprolactone and butylcarbonic acid 126-58-9DP, Dipentaerythritol, reaction product with ε-caprolactone and acrylic acid and butylcarbonic acid 502-44-3DP, ε-Caprolactone, reaction product with dipentaerythritol and acrylic acid and butylcarbonic acid 10411-26-4DP, MonoButylcarbonate, reaction product with dipentaerythritol and ε-caprolactone and acrylic acid
(**electrolyte** for **lithium battery**)

L58 ANSWER 4 OF 33 HCA COPYRIGHT 2007 ACS on STN
140:149224 **Nonaqueous electrolytic** solution with improved safety for **lithium battery.** Kim, Jun-ho; Lee, Ha-young; Choy, Sang-hoon; Kim, Ho-sung (Samsung SDI Co., Ltd., S. Korea). U.S. Pat. Appl. Publ. US 2004029018 A1 20040212, 12 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-637554 20030811. PRIORITY: KR 2002-47510 20020812.

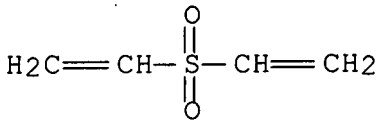
AB A **nonaq. electrolytic** soln. and a **lithium battery** employing the same include a **lithium** salt, an **org. solvent**, and a halogenated benzene compd. The use of the **nonaq. electrolytic** soln. causes formation of a polymer by oxidative decompn. of the **electrolytic** soln. even if a sharp voltage increase occurs due to overcharging of the **battery**, leading to consumption of an overcharge current, thus protecting the **battery.**

IT **67-71-0**, Methyl sulfone **77-77-0**, Vinyl sulfone
127-63-9, Phenyl sulfone **620-32-6**, Benzyl sulfone
21324-40-3, **Lithium** hexafluorophosphate
(**nonaq. electrolytic** soln. with improved safety for **lithium battery**)

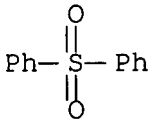
RN 67-71-0 HCA
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



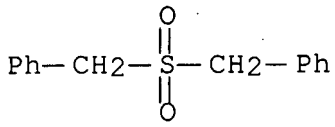
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



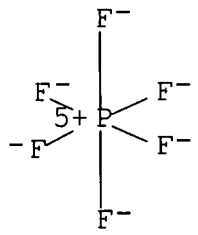
RN 127-63-9 HCA
CN Benzene, 1,1'-sulfonylbis- (CA INDEX NAME)

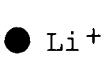


RN 620-32-6 HCA
CN Benzene, 1,1'-[sulfonylbis(methylene)]bis- (CA INDEX NAME)



RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)





IC ICM H01M010-40
INCL 429326000; 429200000; 429340000; 429331000; 429332000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium battery nonaq**
electrolyte soln improved safety
IT Esters, uses
Ethers, uses
Hydrocarbons, uses

(C1-20; **nonaq. electrolytic** soln. with improved safety for **lithium battery**)

IT Aromatic hydrocarbons, uses
(C5-20; **nonaq. electrolytic** soln. with improved safety for **lithium battery**)

IT Secondary **batteries**
(**lithium**; **nonaq. electrolytic** soln. with improved safety for **lithium battery**)

IT **Battery electrolytes**
(**nonaq. electrolytic** soln. with improved safety for **lithium battery**)

IT Polyesters, uses
(**nonaq. electrolytic** soln. with improved safety for **lithium battery**)

IT Alcohols, uses
(polyhydric; **nonaq. electrolytic** soln. with improved safety for **lithium battery**)

IT 3087-37-4, Tetrapropyltitanate
(**nonaq. electrolytic** soln. with improved safety for **lithium battery**)

IT 502-44-3, ε-Caprolactone 7439-93-2D, **Lithium**, salt 12190-79-3, Cobalt **lithium** oxide colio2
(**nonaq. electrolytic** soln. with improved safety for **lithium battery**)

IT 126-58-9DP, Dipentaerythritol, deriv.
(**nonaq. electrolytic** soln. with improved safety for **lithium battery**)

IT 56-81-5, Glycerol, uses **67-71-0**, Methyl sulfone 71-43-2D, Benzene, halogenated **77-77-0**, Vinyl sulfone 94-36-0, Benzoylperoxide, uses 96-49-1, Ethylene carbonate 105-64-6, Diisopropyl peroxy dicarbonate 105-74-8, Lauroyl peroxide 108-32-7, Propylene carbonate 115-77-5, Pentaerythritol, uses 126-33-0, Tetramethylene sulfone 126-58-9, DiPentaerythritol **127-63-9**, Phenyl sulfone 456-55-3, Trifluoromethyl phenyl ether 462-06-6, Fluorobenzene **620-32-6**, Benzyl sulfone 623-53-0, Ethyl methyl carbonate 1561-49-5, Dicyclohexyl peroxy dicarbonate 1712-87-4, m-Toluoyl peroxide 2972-19-2 3006-82-4, tert-Butylperoxy-2-ethylhexanoate 9002-88-4, Polyethylene 9003-07-0, Polypropylene 14666-78-5 15520-11-3, Bis(4-tert-butylcyclohexyl) peroxydicarbonate

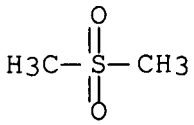
21151-56-4, Benzene, 1-chloro-4-(chloromethoxy)- **21324-40-3**
, **Lithium** hexafluorophosphate 28452-93-9, Butadiene
sulfone 32752-09-3, Isobutyl peroxide 92177-99-6,
3,3,5-Trimethylhexanoylperoxide 130038-50-5, 2-Propenoic acid,
2-methyl-, ion(1-) homopolymer, uses 651294-25-6 651294-26-7
651294-27-8
(**nonaq. electrolytic** soln. with improved
safety for **lithium battery**)

L58 ANSWER 5 OF 33 HCA COPYRIGHT 2007 ACS on STN
140:96917 **Nonaqueous electrolytic** solution for
lithium battery. Abe, Koji; Hattori, Takayuki;
Matsumori, Yasuo (Ube Industries, Ltd., Japan). U.S. Pat. Appl.
Publ. US 2004013946 A1 20040122, 10 pp. (English). CODEN: USXXCO.
APPLICATION: US 2003-619005 20030715. PRIORITY: JP 2002-205560
20020715; JP 2002-326391 20021111.

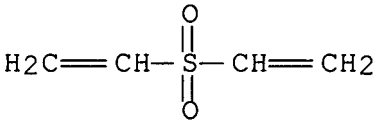
AB A **nonaq. electrolytic** soln. comprising a **nonaq.** solvent and an **electrolyte**, which further contains a combination of a nitrile compd. and an S=O group-contg. compd. (or a dinitrile compd.) in an amt. of 0.001 to 10 wt.% imparts improved cycle performance and storage property to a **lithium battery**, particularly a **lithium** secondary **battery.**

IT **67-71-0**, Dimethyl sulfone **77-77-0**, Divinyl sulfone
14283-07-9, **Lithium** tetrafluoroborate
21324-40-3, **Lithium** hexafluorophosphate
(**nonaq. electrolytic** soln. for
lithium battery)

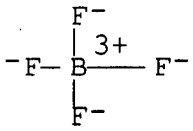
RN 67-71-0 HCA
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)

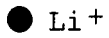


RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)

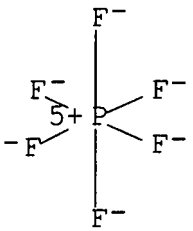


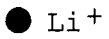
RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)





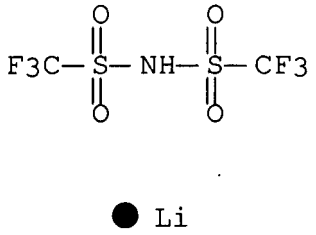
RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)





IT **90076-65-6**
(nonaq. electrolytic soln. for
lithium battery)
RN 90076-65-6 HCA
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,

lithium salt (1:1) (CA INDEX NAME)



IC ICM H01M010-40
ICS H01M004-58
INCL 429326000; 429339000; 429340000; 429330000; 429231800
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium battery nonaq**
electrolyte nitrile sulfite additive
IT Primary **batteries**
Secondary **batteries**
(**lithium**; **nonaq. electrolytic** soln.
for **lithium battery**)
IT **Battery electrolytes**
(**nonaq. electrolytic** soln. for
lithium battery)
IT Ethers, uses
Lactones
Nitriles, uses
(**nonaq. electrolytic** soln. for
lithium battery)
IT 64-67-5, Diethyl sulfate 66-27-3, Methyl methanesulfonate
67-71-0, Dimethyl sulfone 75-05-8, Acetonitrile, uses
77-77-0, Divinyl sulfone 77-78-1, Dimethyl sulfate
77-79-2, Sulfolene 80-18-2, Methyl benzenesulfonate 91-15-6,
1,2-Dicyanobenzene 96-48-0, γ-Butyrolactone 96-49-1,
Ethylene carbonate 100-47-0, Benzonitrile, uses 107-12-0,
Propionitrile 109-74-0, Butyronitrile 110-59-8, Valeronitrile
110-61-2, Succinonitrile 111-69-3, Adiponitrile 124-12-9,
Octanenitrile 126-33-0, Sulfolane 140-29-4, Phenylacetonitrile
463-79-6D, Carbonic acid, cyclic compd. 463-79-6D, Carbonic acid,

linear compd. 544-13-8, Glutaronitrile 594-43-4, Ethyl methyl sulfone 597-35-3, Diethyl sulfone 616-42-2, Dimethyl sulfite 623-26-7, 1,4-Dicyanobenzene 623-53-0, Ethyl methylcarbonate 623-81-4, Diethyl sulfite 626-17-5, 1,3-Dicyanobenzene 628-73-9, Hexanenitrile 629-40-3, 1,6-Dicyanohexane 646-20-8, 1,5-Dicyanopentane 766-05-2, Cyclohexanecarbonitrile 1120-71-4, 1,3-Propanesultone 1469-73-4, Propylene sulfite 1633-83-6, 1,4-Butanesultone 1675-69-0, 1,7-Dicyanoheptane 1871-96-1, 1,8-Dicyanooctane 1975-78-6, Decanenitrile 2244-07-7, Undecanenitrile 3333-52-6, Tetramethylsuccinonitrile 3741-38-6, Ethylene sulfite 4543-66-2, 1,10-Dicyanodecane 4553-62-2, 2-Methylglutaronitrile 5763-80-4 7735-44-6, 1,12-Dicyanododecane 10526-16-6 **14283-07-9**, **Lithium** tetrafluoroborate 15074-49-4, Pentanedinitrile, 2,4-dimethyl- 16525-39-6 **21324-40-3**, **Lithium** hexafluorophosphate 51937-69-0, Pentanedinitrile, 2,2,4,4-tetramethyl- 71172-36-6, 1.9-Dicyanononane 88691-89-8 88691-90-1 88691-91-2 478784-91-7, Ethylene glycol sulfate 643026-52-2 643764-77-6
(**nonaq. electrolytic** soln. for **lithium battery**)

IT 5129-37-3, Butyl pivalate **90076-65-6**
(**nonaq. electrolytic** soln. for **lithium battery**)

L58 ANSWER 6 OF 33 HCA COPYRIGHT 2007 ACS on STN

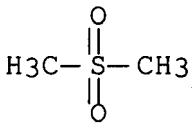
139:398049 Secondary **nonaqueous-electrolyte** **battery** with **electrolyte** containing overcharging inhibitor and sulfur compound. Kotado, Minoru (Mitsubishi Chemical Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2003338317 A 20031128, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-143492 20020517.

AB The claimed **battery** is equipped with an **electrolyte** soln. contg. a compd. which reacts under voltage equal to or higher than max. operation voltage during overcharging, a cyclic carbonate ester having unsatd. bond and/or an acid anhydride, and a S-contg. org. compd. The **battery** provides high safety during overcharging and high-load discharge capacity after storage.

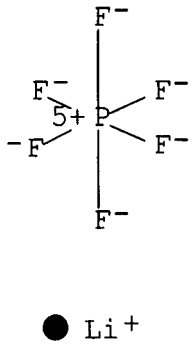
IT **67-71-0**, Dimethylsulfone
(**electrolyte** contg. overcharging inhibitor and sulfur compd. for **nonaq. battery**)

RN 67-71-0 HCA

CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



IT **21324-40-3, Lithium** hexafluorophosphate
(**electrolyte**; **electrolyte** contg. overcharging inhibitor and sulfur compd. for **nonaq. battery**
)
RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST sulfur compd cyclic carbonate anhydride **electrolyte** **nonaq battery**; overcharging inhibitor **electrolyte nonaq battery** safety
IT **Battery electrolytes**
Safety
(**electrolyte** contg. overcharging inhibitor and sulfur compd. for **nonaq. battery**)
IT Secondary **batteries**
(**lithium**; **electrolyte** contg. overcharging inhibitor and sulfur compd. for **nonaq. battery**

)

IT 108-30-5, Succinic anhydride, uses 872-36-6, Vinylene carbonate
(additive; **electrolyte** contg. overcharging inhibitor and sulfur compd. for **nonaq. battery**)

IT 66-27-3, Methyl methanesulfonate **67-71-0**, Dimethylsulfone 1120-71-4, 1,3-Propanesultone
(**electrolyte** contg. overcharging inhibitor and sulfur compd. for **nonaq. battery**)

IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methyl carbonate
(**electrolyte** solvent; **electrolyte** contg. overcharging inhibitor and sulfur compd. for **nonaq. battery**)

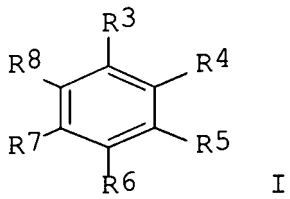
IT **21324-40-3**, **Lithium** hexafluorophosphate
(**electrolyte**; **electrolyte** contg. overcharging inhibitor and sulfur compd. for **nonaq. battery**
)

IT 92-52-4, Biphenyl, uses 827-52-1, Cyclohexylbenzene
(overcharging inhibitor; **electrolyte** contg. overcharging inhibitor and sulfur compd. for **nonaq. battery**)

L58 ANSWER 7 OF 33 HCA COPYRIGHT 2007 ACS on STN

139:326026 **Nonaqueous electrolyte** solution for **Li** secondary **battery.** Noda, Daisuke; Shizuka, Kenji; Kinoshita, Shinichi (Mitsubishi Chemical Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2003297423 A 20031017, 10 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-100543 20020402.

GI



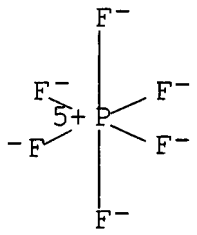
I

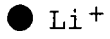
AB The invention relates to a **nonaq. electrolyte** soln. for a **Li** secondary **battery**, comprising: the sulfone compd. represented by SO2(R1)(R2) [R1 and R2 = aryl, and alkyl; R1 and R2 may be joined to form a ring structure]; and the arom. compd. with the mol. wt. ≤ 500 and represented by I [R3-8 = H, halo, C1-12 alkyl, C5-12 cycloalkyl, C6-12 aryl, and C11-14 arylcycloalkyl].

IT **21324-40-3**, **Lithium** hexafluorophosphate (LiPF6)
(**nonaq. electrolyte** soln. for **Li** secondary **battery**)

RN 21324-40-3 HCA

CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

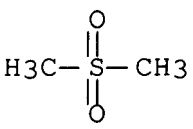




IT **67-71-0**, Dimethylsulfone
(overcharging prevention agent; **nonaq. electrolyte** soln. for **Li** secondary **battery**)

RN 67-71-0 HCA

CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



IC ICM H01M010-40

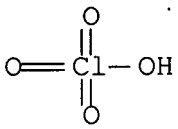
ICS H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **nonaq electrolyte** soln **lithium** secondary **battery**
IT **Battery electrolytes**
Secondary **batteries**
(**nonaq. electrolyte** soln. for **Li** secondary **battery**)
IT Sulfones
(**nonaq. electrolyte** soln. for **Li** secondary **battery**)
IT **Electrolytes**
(**nonaq.**; **nonaq. electrolyte** soln. for **Li** secondary **battery**)
IT 96-49-1, Ethylenecarbonate 105-58-8, Diethylcarbonate
(**electrolyte** soln.; **nonaq. electrolyte** soln. for **Li** secondary **battery**)
IT **21324-40-3**, **Lithium** hexafluorophosphate (LiPF6)
(**nonaq. electrolyte** soln. for **Li** secondary **battery**)
IT 872-36-6, Vinylenecarbonate
(**nonaq. electrolyte** soln. for **Li** secondary **battery**)
IT **67-71-0**, Dimethylsulfone 132-64-9, Dibenzofuran 827-52-1, Cyclohexylbenzene
(overcharging prevention agent; **nonaq. electrolyte** soln. for **Li** secondary **battery**)

L58 ANSWER 8 OF 33 HCA COPYRIGHT 2007 ACS on STN
139:294681 **Electrolyte** for **lithium battery** to reduce overcharge and improve electrochemical characteristics.
Kim, Jun-Ho; Lee, Ha-Young; Choy, Sang-Hoon; Kim, Ho-Sung; Noh, Hyeong-Gon (Samsung SDI Co., Ltd., S. Korea). U.S. Pat. Appl. Publ. US 2003190529 A1 20031009, 19 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-393294 20030321. PRIORITY: KR 2002-18264 20020403.
AB An **electrolyte** for a **lithium battery** includes a **nonaq. org. solvent**, a **lithium** salt, and an additive comprising (a) a compd. represented by the formula [(R1)nC6H(6-

n+m)(X)m], and (b) a compd. selected from the group consisting of a sulfone-based compd., a poly(ester)(meth)acrylate, a polymer of poly(ester)(meth)acrylate, and a mixt. thereof: wherein R1 is a C1-10 alkyl, a C 1-10 alkoxy, or a C6-10 aryl, and preferably a Me, Et, or methoxy, X is a halogen, and m and n are integers ranging from 1 to 5, where m+n is less than or equal to 6.

IT **7791-03-9**, **Lithium** perchlorate **10377-51-2**
, **Lithium** iodide (LiI) **14283-07-9**,
Lithium tetrafluoroborate **18424-17-4**,
Lithium hexafluoroantimonate **21324-40-3**,
Lithium hexafluorophosphate **29935-35-1**,
Lithium hexafluoroarsenate **33454-82-9**,
Lithium triflate **90076-65-6 131651-65-5**,
Lithium perfluorobutanesulfonate
(**electrolyte** for **lithium battery** to
reduce overcharge and improve electrochem. characteristics)

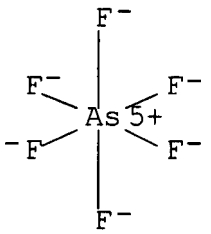
RN 7791-03-9 HCA
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)

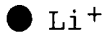


RN 10377-51-2 HCA
CN Lithium iodide (LiI) (CA INDEX NAME)

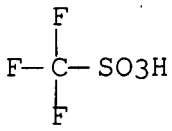
RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)

RN 29935-35-1 HCA
CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

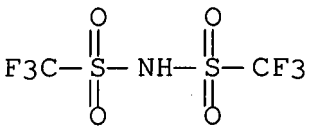




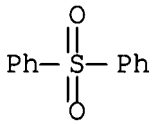
RN 33454-82-9 HCA
CN Methanesulfonic acid, 1,1,1-trifluoro-, lithium salt (1:1) (CA INDEX NAME)



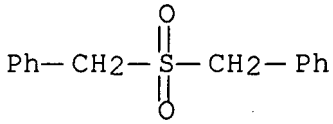
RN 90076-65-6 HCA
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:1) (CA INDEX NAME)



CN Benzene, 1,1'-sulfonylbis- (CA INDEX NAME)



RN 620-32-6 HCA
CN Benzene, 1,1'-[sulfonylbis(methylene)]bis- (CA INDEX NAME)



IC ICM H01M006-18
INCL 429307000; 429309000; 429326000; 429322000; 429323000; 429330000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium battery electrolyte** overcharge lowering
IT **Battery electrolytes**
(**electrolyte** for **lithium battery** to reduce overcharge and improve electrochem. characteristics)
IT Secondary **batteries**
(**lithium**; **electrolyte** for **lithium battery** to reduce overcharge and improve electrochem. characteristics)
IT Peroxides, uses
(org.; **electrolyte** for **lithium battery** to reduce overcharge and improve electrochem. characteristics)
IT Alcohols, uses
(trihydric; **electrolyte** for **lithium battery** to reduce overcharge and improve electrochem. characteristics)
IT 3087-37-4, Tetrapropyltitanate

(**electrolyte** for **lithium battery** to
reduce overcharge and improve electrochem. characteristics)
IT 71-43-2, Benzene, uses 96-49-1, Ethylene carbonate 105-58-8,
Diethyl carbonate 108-32-7, Propylene carbonate 108-88-3,
Toluene, uses 462-06-6, Fluorobenzene 616-38-6, Dimethyl
carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl
carbonate 1330-20-7, Xylene, uses 4437-85-8, Butylene carbonate
7447-41-8, **Lithium** chloride (LiCl), uses **7791-03-9**
, **Lithium** perchlorate **10377-51-2**,
Lithium iodide (LiI) 12355-58-7, **Lithium**
aluminate (Li5AlO4) **14283-07-9**, **Lithium**
tetrafluoroborate **18424-17-4**, **Lithium**
hexafluoroantimonate **21324-40-3**, **Lithium**
hexafluorophosphate 27359-10-0, Trifluorotoluene
29935-35-1, **Lithium** hexafluoroarsenate
33454-82-9, **Lithium** triflate 35363-40-7, Ethyl
propyl carbonate, uses 56525-42-9, Methyl propyl carbonate, uses
90076-65-6 131651-65-5, **Lithium**
perfluorobutanesulfonate
(**electrolyte** for **lithium battery** to
reduce overcharge and improve electrochem. characteristics)
IT 126-58-9DP, Dipentaerythritol, reaction product with
ε-caprolactone 502-44-3DP, ε-Caprolactone,
reaction product with dipentaerythritol 609772-45-4P
(**electrolyte** for **lithium battery** to
reduce overcharge and improve electrochem. characteristics)
IT 56-81-5, Glycerol, uses **67-71-0**, Methyl sulfone
77-77-0, Vinyl sulfone 79-10-7D, Acrylic acid,
ω-fatty acid esters C2-C21 79-41-4D, Methacrylic acid,
ω-fatty acid esters C2-C21 94-36-0, Benzoyl peroxide, uses
104-92-7, 4-Bromoanisole 105-64-6, Diisopropyl peroxy dicarbonate
105-74-8, Lauroyl peroxide 126-33-0, Tetramethylene sulfone
127-63-9, Phenyl sulfone 149-32-6, Erythritol 452-10-8,
2,4-Difluoroanisole 456-49-5, 3-Fluoroanisole 459-60-9,
4-Fluoroanisole **620-32-6**, Benzyl sulfone 623-12-1,
4-Chloroanisole 1561-49-5, Dicyclohexyl peroxy dicarbonate
1712-87-4, m-Toluoyl peroxide 2398-37-0, 3-Bromoanisole
2845-89-8, 3-Chloroanisole 3006-82-4, tert-Butylperoxy-2-ethyl-
hexanoate 14666-78-5 15520-11-3, Bis(4-tert-
butylcyclohexyl)peroxy dicarbonate 28452-93-9, Butadiene sulfone

32752-09-3, Isobutyl peroxide 92177-99-6, 3,3,5-Trimethylhexanoyl peroxide 93343-10-3, 3,5-Difluoroanisole 202925-08-4, 3-Chloro-5-fluoroanisole 609365-67-5
(**electrolyte** for **lithium battery** to reduce overcharge and improve electrochem. characteristics)

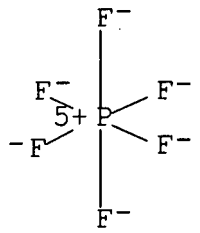
L58 ANSWER 9 OF 33 HCA COPYRIGHT 2007 ACS on STN
139:233057 Method for production of anode active material composition for a rechargeable **lithium battery.** Kim, Chang-Seob; Kim, Ju-Hyung; Park, Un-Sick (Samsung Sdi Co., Ltd., S. Korea). U.S. Pat. Appl. Publ. US 2003170534 A1 20030911, 6 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-371299 20030221. PRIORITY: KR 2002-11952 20020306.

AB Disclosed is a neg. active material compn. for a rechargeable **lithium battery**, a method of producing a neg. electrode for a rechargeable **lithium battery** using the same, and a rechargeable **lithium battery** using the same. The neg. active material compn. includes a neg. active material, an additive capable of forming a surface **electrolyte** interface film on a neg. electrode during charge and discharge, a binder, and an **org. solvent.**

IT **21324-40-3**, **Lithium** hexafluorophosphate
(method for prodn. of anode active material compn. for rechargeable **lithium battery**)

RN 21324-40-3 HCA

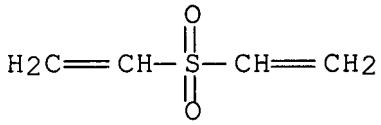
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



IT **77-77-0**, Vinyl sulfone
(method for prodn. of anode active material compn. for rechargeable **lithium battery**)

RN 77-77-0 HCA

CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)

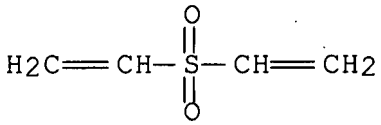


IC ICM H01M002-16
ICS B05D005-12; H01M004-58
INCL 429137000; X42-923.18; X42-7 5.8; X42-923.195; X42-922.4; X42-922.3; X42-922.1; X42-923.16; X42-923.15
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST anode active material compn rechargeable **lithium battery**
IT Secondary **batteries**
(**lithium**; method for prodn. of anode active material compn. for rechargeable **lithium battery**)
IT **Battery** anodes
(method for prodn. of anode active material compn. for rechargeable **lithium battery**)
IT Carbonaceous materials (technological products)
(method for prodn. of anode active material compn. for rechargeable **lithium battery**)
IT Fluoropolymers, uses
(method for prodn. of anode active material compn. for rechargeable **lithium battery**)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 7440-50-8, Copper, uses 7782-42-5, Graphite, uses 9003-07-0, Polypropylene 12190-79-3, Cobalt **lithium** oxide colio2 **21324-40-3**, **Lithium** hexafluorophosphate
(method for prodn. of anode active material compn. for rechargeable **lithium battery**)
IT **77-77-0**, Vinyl sulfone 872-36-6, Vinylene carbonate 1120-71-4, 1,3-Propanesultone 7446-09-5, Sulfur dioxide, uses 7704-34-9D, Sulfur, compd. 7723-14-0D, Phosphorus, compd. 24937-79-9, Pvdf
(method for prodn. of anode active material compn. for rechargeable **lithium battery**)

L58 ANSWER 10 OF 33 HCA COPYRIGHT 2007 ACS on STN
139:166961 Secondary **nonaqueous-electrolyte**
battery with **electrolyte** solvent containing chain
ester. Murai, Tetsuya (Japan Storage Battery Co., Ltd., Japan).
Jpn. Kokai Tokkyo Koho JP 2003229168 A 20030815, 12 pp.
(Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-25969 20020201.

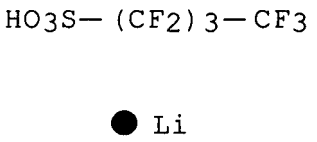
AB The claimed **battery** is equipped with a **nonaq.- electrolyte** solvent contg. a chain carbonate ester R1OCO2R2 (R1 = C4-12 hydrocarbyl; R2 = C1-12 hydrocarbyl) and ≥80 vol.% ethylene carbonate, propylene carbonate, and/or γ-butyrolactone. The resulting **nonaq. electrolyte** provides high wettability to give a **battery** showing high charging-discharging performance and expansion prevention during high-temp. storage.

IT **77-77-0**, Divinyl sulfone
(solvent; secondary **nonaq.-electrolyte**
battery with **electrolyte** solvent contg. chain
ester)
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)

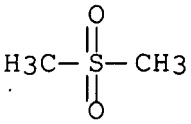


IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **nonaq electrolyte** solvent chain ester secondary
battery
IT Secondary **batteries**
(**lithium**; secondary **nonaq.-**
electrolyte battery with **electrolyte**
solvent contg. chain ester)
IT **Battery electrolytes**
(secondary **nonaq.-electrolyte battery**
with **electrolyte** solvent contg. chain ester)
IT 542-52-9, Di-n-butyl carbonate 1680-31-5, Dioctyl carbonate
4824-75-3 6290-55-7, Di n-decyl carbonate 6482-34-4, Diisopropyl
carbonate 7523-15-1, Di n-hexyl carbonate 30714-78-4

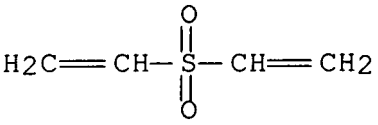
RN 131651-65-5 HCA
CN 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt (1:1) (CA INDEX NAME)



IT **67-71-0**, Methyl sulfone **77-77-0**, Vinyl sulfone **127-63-9**, Phenyl sulfone **620-32-6**, Benzyl sulfone
(**electrolyte** for **lithium battery** to reduce overcharge and improve electrochem. characteristics)
RN 67-71-0 HCA
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



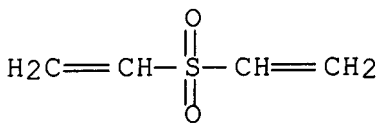
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



RN 127-63-9 HCA

35466-84-3 36560-81-3, Dinonyl carbonate
(secondary **nonaq.-electrolyte battery** with **electrolyte** solvent contg. chain ester)
IT 77-77-0, Divinyl sulfone 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 872-36-6, Vinylene carbonate 1120-71-4, Propane sultone 4427-96-7, Vinylethylene carbonate
(solvent; secondary **nonaq.-electrolyte battery** with **electrolyte** solvent contg. chain ester)

L58 ANSWER 11 OF 33 HCA COPYRIGHT 2007 ACS on STN
139:9309 Organic **electrolyte** solutions and polymer **electrolytes** containing carbonates having carbon-carbon double bonds and secondary **lithium batteries.**
Oh, Wan-seok; Lee, Sang-won; Kim, Ko-sup; Choi, Sang-hoon (Samsung Sdi Co., Ltd., S. Korea). Jpn. Kokai Tokkyo Koho JP 2003163032 A 20030606, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-257063 20020902. PRIORITY: KR 2001-56438 20010913.
AB The org. **electrolyte** solns. contain **Li** salt, **nonaq. org. solvent**, 0.01-6 wt.% (based on the total amt. of the solvent) ethylenically unsatd. compds. having b.p. 50-170°, and optionally 5-15 wt.% (based on the total amt. of the solvent) fluorobenzene. Polymer **electrolyte** comprising a polymer matrix contg. the said **electrolyte** solns. and secondary **lithium batteries** comprising the polymer **electrolytes** are also claimed. Expansion of the **batteries** due to gassing is prevented.
IT 77-77-0, Vinyl sulfone
(**electrolyte** solns. contg. ethylenically unsatd. carbonates for use in secondary **lithium battery** polymer **electrolytes**)
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)

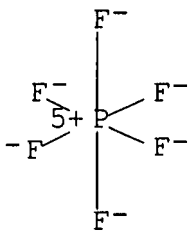


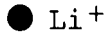
IT **21324-40-3, Lithium** hexafluorophosphate

(**electrolyte** solns. contg. ethylenically unsatd. carbonates for use in secondary **lithium battery** polymer **electrolytes**)

RN 21324-40-3 HCA

CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)





IC ICM H01M010-40
ICS C07C069-96

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76

ST secondary **lithium battery** polymer **electrolyte**; org **electrolyte** soln ethylenic compd; alkylene carbonate **electrolyte** soln

IT **Battery electrolytes**
Electrolytic solutions
(**electrolyte** solns. contg. ethylenically unsatd. carbonates for use in secondary **lithium battery** polymer **electrolytes**)

IT Fluoropolymers, uses
(**electrolyte** solns. contg. ethylenically unsatd. carbonates for use in secondary **lithium battery** polymer **electrolytes**)

IT Secondary **batteries**
(**lithium**; **electrolyte** solns. contg. ethylenically unsatd. carbonates for use in secondary **lithium battery** polymer **electrolytes**)

IT **77-77-0**, Vinyl sulfone 107-13-1, Acrylonitrile, uses
462-06-6, Fluorobenzene 872-36-6, Vinylene carbonate

(**electrolyte** solns. contg. ethylenically unsatd. carbonates for use in secondary **lithium battery** polymer **electrolytes**)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer **21324-40-3, Lithium** hexafluorophosphate
(**electrolyte** solns. contg. ethylenically unsatd. carbonates for use in secondary **lithium battery** polymer **electrolytes**)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Methylethyl carbonate
(solvent; **electrolyte** solns. contg. ethylenically unsatd. carbonates for use in secondary **lithium battery** polymer **electrolytes**)

L58 ANSWER 12 OF 33 HCA COPYRIGHT 2007 ACS on STN

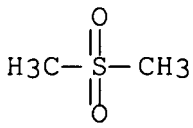
138:257909 **Nonaqueous electrolyte battery** and **nonaqueous electrolytic** solution. Takami, Norio; Ishii, Haruchika (Kabushiki Kaisha Toshiba, Japan). U.S. Pat. Appl. Publ. US 2003059684 A1 20030327, 8 pp. (English). CODEN: USXXCO. APPLICATION: US 2002-233528 20020904. PRIORITY: JP 2001-295004 20010926.

AB The present invention achieves an increased capacity and prolonged life of **nonaq. electrolyte batteries** of the type in which light metals, such as magnesium, calcium or aluminum, are used in the neg. electrode. The present invention also provides a thermally stable **nonaq. electrolytic** soln. for use with such **batteries.** The **nonaq. electrolyte battery** in accordance with the present invention includes a pos. electrode; a neg. electrode contg. at least one element selected from the group consisting of aluminum, calcium and magnesium; and a **nonaq** . **electrolytic** soln. composed of a mixed **solvent** of an **org. solvent** and an alkyl sulfone having a structure represented by R1R2SO2, where R1 and R2 are each independently an alkyl group, and at least one type of salt selected from the group consisting of aluminum salt, calcium salt and magnesium salt. The **org. solvent** is capable of dissolving the alkyl sulfone along with at least one type of salt selected from the group consisting of aluminum salt, calcium salt and magnesium salt.

IT **67-71-0**, Dimethyl sulfone **39300-70-4**, **Lithium** nickel oxide
(**nonaq. electrolyte battery** and **nonaq. electrolytic** soln.)

RN 67-71-0 HCA

CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



RN 39300-70-4 HCA
CN Lithium nickel oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Ni	x	7440-02-0
Li	x	7439-93-2

IC ICM H01M004-46
ICS H01M004-38; H01M010-40; H01M004-58; H01M004-52; H01M004-50; H01M004-48
INCL 429326000; 429231600; 429340000; 429329000; 429330000; 429231100; 429224000; 429231300; 429231500; 429221000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **nonaq electrolyte battery**
IT Sulfones
(alkyl; **nonaq. electrolyte battery** and **nonaq. electrolytic** soln.)
IT Ethers, uses
(chain-like; **nonaq. electrolyte battery** and **nonaq. electrolytic** soln.)
IT Carbonates, uses
(cyclic and chain-like; **nonaq. electrolyte battery** and **nonaq. electrolytic** soln.)
IT Ethers, uses
(cyclic; **nonaq. electrolyte battery** and **nonaq. electrolytic** soln.)

IT **Battery electrolytes**
Secondary **batteries**
(**nonaq. electrolyte battery** and
nonaq. electrolytic soln.)
IT Carbon black, uses
(**nonaq. electrolyte battery** and
nonaq. electrolytic soln.)
IT 25583-20-4, Titanium nitride
(coating; **nonaq. electrolyte battery**
and **nonaq. electrolytic** soln.)
IT **67-71-0**, Dimethyl sulfone 75-05-8, Acetonitrile, uses
96-48-0, γ-Butyrolactone 108-32-7, Propylene carbonate
594-43-4, Ethyl methyl sulfone 597-35-3, Diethyl sulfone
598-03-8, Dipropyl sulfone 1332-37-2, Iron oxide, uses
7429-90-5, Aluminum, uses 7429-90-5D, Aluminum, salt 7439-95-4,
Magnesium, uses 7439-95-4D, Magnesium, salt 7440-70-2, Calcium,
uses 7440-70-2D, Calcium, salt 7446-70-0, Aluminum chloride,
uses 7487-88-9, Magnesium sulfate, uses 7720-78-7, Ferrous
sulfate 7778-18-9, Calcium sulfate 7782-42-5, Graphite, uses
10028-22-5, Ferric sulfate 10034-81-8, Magnesium perchlorate
10043-01-3, Aluminum sulfate 10124-37-5, Calcium nitrate
10377-60-3, Magnesium nitrate 11099-11-9, Vanadium oxide
11129-60-5, Manganese oxide 12049-73-9, Calcium silicide ca2si
13473-90-0, Aluminum nitrate 13477-36-6, Calcium perchlorate
13814-93-2, Calcium tetrafluoroborate 14403-54-4, Aluminum
tetrafluoroborate 14452-39-2, Aluminum perchlorate 14708-13-5,
Magnesium tetrafluoroborate 22831-39-6, Magnesium silicide mg2si
25152-52-7 **39300-70-4**, **Lithium** nickel oxide
39457-42-6, **Lithium** Manganese oxide 52627-24-4, Cobalt
lithium oxide 55120-75-7, Calcium triflate 60871-83-2,
Magnesium triflate 74974-61-1, Aluminum triflate 78415-39-1,
Calcium hexafluorophosphate 88453-49-0, **Lithium**
heptachlorodialuminate(1-) 113359-60-7 502459-99-6 502460-01-7
502460-02-8
(**nonaq. electrolyte battery** and
nonaq. electrolytic soln.)

L58 ANSWER 13 OF 33 HCA COPYRIGHT 2007 ACS on STN
138:42046 Secondary **lithium battery.** Seki, Keiichi;
Kobayashi, Mitsuharu; Saito, Hiroyuki; Yamamoto, Masaki (Mitsubishi

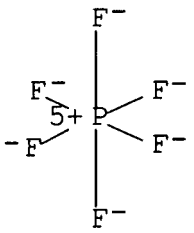
Chemical Corporation, Japan). PCT Int. Appl. WO 2002101869 A1 **20021219**, 78 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (Japanese). CODEN: PIXXD2. APPLICATION: WO 2002-JP5656 20020607. PRIORITY: JP 2001-171851 20010607; JP 2001-179748 20010614; JP 2001-192635 20010626.

AB The **battery** has a cathode, an anode, and an **electrolyte** in a flexible **battery** case; where the enthalpy difference between the neutral **nonaq. electrolyte** solvent mol. and it monovalent anion radical, formed by adding an electron to the mol., ΔEsol is greater than the enthalpy difference between an additive in the **battery** and it monovalent anion radical, formed by adding an electron to the mol., ΔEadd. The additive is preferably a Lewis acid, e.g. a S compd. having a S:O bonding.

IT **21324-40-3, Lithium** hexafluorophosphate
(enthalpy difference between neutral mol. and monovalent anion radical of solvent and additive in **electrolytes** for secondary **lithium batteries**)

RN 21324-40-3 HCA

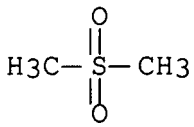
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



● Li^+

IT **67-71-0**, Dimethyl sulfone
(enthalpy difference between neutral mol. and monovalent anion radical of solvent and additive in **electrolytes** for

secondary **lithium batteries**)
RN 67-71-0 HCA
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



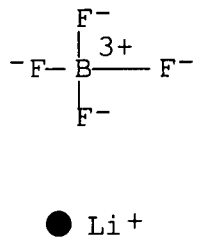
IC ICM H01M010-40
ICS H01M004-58; H01M004-62; H01M004-02; H01M002-02
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary **lithium battery** sulfur compd additive enthalpy; **electrolyte** solvent enthalpy secondary **lithium battery**
IT **Battery electrolytes**
Enthalpy
(enthalpy difference between neutral mol. and monovalent anion radical of solvent and additive in **electrolytes** for secondary **lithium batteries**)
IT Secondary **batteries**
(**lithium**; enthalpy difference between neutral mol. and monovalent anion radical of solvent and additive in **electrolytes** for secondary **lithium batteries**)
IT **21324-40-3, Lithium** hexafluorophosphate
(enthalpy difference between neutral mol. and monovalent anion radical of solvent and additive in **electrolytes** for secondary **lithium batteries**)
IT 64-67-5, Diethyl sulfate 66-27-3, Methyl methanesulfonate 67-68-5, Dimethyl sulfoxide, uses **67-71-0**, Dimethyl sulfone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 126-33-0, Sulfolane 616-42-2, Dimethyl sulfite 1120-71-4, 1,3-Propanesultone 1600-44-8, Tetramethylene sulfoxide 3741-38-6, Ethylene sulfite 478784-91-7, Ethylene glycol sulfate
(enthalpy difference between neutral mol. and monovalent anion radical of solvent and additive in **electrolytes** for secondary **lithium batteries**)

L58 ANSWER 14 OF 33 HCA COPYRIGHT 2007 ACS on STN
137:339972 **Nonaqueous electrolyte** containing **nonaqueous** solvents and **nonaqueous electrolyte** secondary **battery** using the same for suppression of gas generation during high-temperature storage and charging/discharging processes. Sekino, Masahiro; Sato, Asako; Fujiwara, Masashi; Monma, Shun; Hasebe, Hiroyuki (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2002313418 A **20021025**, 18 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-110918 20010410.

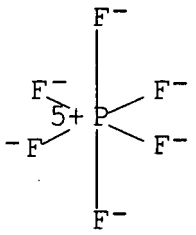
AB The **nonaq. electrolyte** comprises a **Li** salt dissolved in a **nonaq.** solvent, wherein the **nonaq.** solvent is made up of ethylene carbonate (EC), propylene carbonate (PC), γ-butyrolactone (BL), and ≥1 4th component selected from diglycolic acid anhydride, 2-sulfobenzoic acid anhydride, and divinylsulfone so as to satisfy $15 \leq x \leq 50$, $2 \leq y \leq 35$, $30 \leq z \leq 85$, and $0 < p \leq 4$ (x, y z and p are vo.% of EC, PC, BL, and 4th component, resp.).

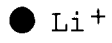
IT **14283-07-9 21324-40-3, Lithium** hexafluorophosphate
(**electrolyte** used for **Li** secondary **battery**)

RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)

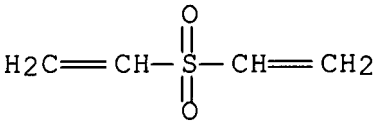


RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)





IT **77-77-0**, Divinylsulfone
(solvent in **nonaq. electrolyte** used for **Li** secondary **battery**)
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



IC ICM H01M010-40
ICS H01M010-40; H01M002-02
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **nonaq electrolyte lithium** salt solvent; **lithium nonaq** secondary **battery** solvent
IT Secondary **batteries**
(**lithium**; solvent in **nonaq. electrolyte** used for **Li** secondary **battery**)
IT **Battery electrolytes**
(solvent in **nonaq. electrolyte** used for **Li** secondary **battery**)
IT **14283-07-9 21324-40-3, Lithium** hexafluorophosphate

(**electrolyte** used for **Li** secondary **battery**)

IT **77-77-0**, Divinylsulfone 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 110-99-6, Diglycolic acid 632-25-7, 2-Sulfobenzoic acid
(solvent in **nonaq. electrolyte** used for **Li** secondary **battery**)

L58 ANSWER 15 OF 33 HCA COPYRIGHT 2007 ACS on STN

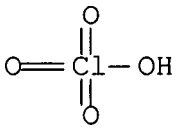
137:188305 **Nonaqueous** secondary **battery** having enhanced discharge capacity retention. Hamamoto, Toshikazu; Abe, Koji; Takai, Tsutomu; Matsumori, Yasuo; Ueki, Akira (Ube Industries, Ltd., Japan). U.S. Pat. Appl. Publ. US 2002122988 A1 **20020905**, 13 pp., Cont.-in-part of U.S. Ser. No. 631,518. (English). CODEN: USXXCO. APPLICATION: US 2001-21130 20011022. PRIORITY: JP 1999-219708 19990803; US 2000-631518 20000803; JP 2000-321146 20001020; JP 2000-335946 20001102; JP 2000-363656 20001129.

AB The discharge capacity retention of a **nonaq.** secondary **battery** is enhanced by incorporating into its **nonaq** . **electrolytic** soln. a small amt. of a substituted diphenyldisulfide deriv. in which each of the di-Ph groups has a substituent such as alkoxy, alkenyloxy, alkynyloxy, cycloalkyloxy, aryloxy, acyloxy, alkanesulfonyloxy, arylsulfonyloxy, alkoxycarbonyloxy, aryloxycarbonyloxy, halogen, CF3, CCl3, or CBr3. Preferably, a small amt. of Me 2-propylcarbonate, 2-propynyl methanesulfonate, 1,3-propanesultone, divinylsulfone, 1,4-butanediol dimethanesulfonate or cyclohexylbenzene is further incorporated.

IT **7791-03-9**, **Lithium** perchlorate **14283-07-9**, **Lithium** tetrafluoroborate **21324-40-3**, **Lithium** hexafluorophosphate **90076-65-6**
(**nonaq.** secondary **battery** having enhanced discharge capacity retention)

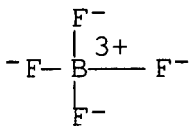
RN 7791-03-9 HCA

CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)



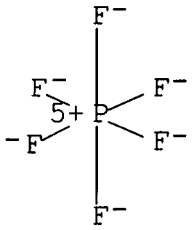
● Li

RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



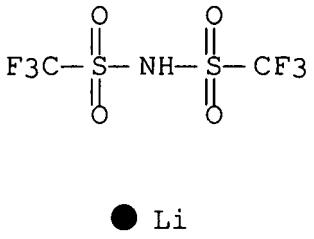
● Li+

RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

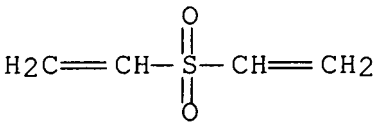


● Li+

RN 90076-65-6 HCA
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:1) (CA INDEX NAME)



IT 77-77-0, Divinylsulfone
(**nonaq.** secondary **battery** having enhanced discharge capacity retention)
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



IC ICM H01M010-40
INCL 429340000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery electrolyte** additive substituted diphenyldisulfide deriv
IT Secondary **batteries**
(**lithium**; **nonaq.** secondary **battery** having enhanced discharge capacity retention)
IT **Battery electrolytes**
(**nonaq.** secondary **battery** having enhanced discharge capacity retention)
IT 68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses 96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran, uses 110-71-4, 1,2-Dimethoxyethane 112-48-1, 1,2-Dibutoxyethane 123-91-1,

1,4-Dioxane, uses 539-92-4, Diisobutyl carbonate 554-12-1, Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 629-14-1, 1,2-Diethoxyethane 872-36-6, Vinylene carbonate 4437-85-8, Butylene carbonate 6482-34-4, Diisopropyl carbonate 7782-42-5, Graphite, uses **7791-03-9**, **Lithium** perchlorate 12190-79-3, Cobalt **lithium** oxide colio2 **14283-07-9**, **Lithium** tetrafluoroborate **21324-40-3**, **Lithium** hexafluorophosphate 85213-04-3, Carbonic acid, methyl 2-methylpropyl ester **90076-65-6** 132404-42-3 132843-44-8 205926-54-1 205926-56-3 365454-70-2 365460-35-1 403699-22-9
(**nonaq.** secondary **battery** having enhanced discharge capacity retention)

IT 51729-83-0, Isopropyl methyl carbonate
(**nonaq.** secondary **battery** having enhanced discharge capacity retention)

IT 55-98-1, 1,4-Butanediol dimethanesulfonate **77-77-0**, Divinylsulfone 405-31-2, Bis(4-fluorophenyl)disulfide 827-52-1, Cyclohexylbenzene 1120-71-4, 1,3-Propanesultone 1142-19-4, Bis(4-chlorophenyl)disulfide 5335-87-5, Bis(4-methoxyphenyl)disulfide 12057-17-9, **Lithium** manganese oxide limn2o4 16156-58-4, 2-Propynyl methanesulfonate 18715-45-2 31121-13-8, Bis(4-ethoxyphenyl)disulfide 61764-71-4, Methyl 2-propynyl carbonate 107014-69-7 113066-89-0, Cobalt **lithium** nickel oxide Co0.2LiNi0.8O2 326921-47-5 326921-48-6
(**nonaq.** secondary **battery** having enhanced discharge capacity retention)

L58 ANSWER 16 OF 33 HCA COPYRIGHT 2007 ACS on STN

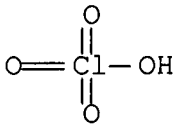
136:328190 **Nonaqueous** secondary **battery** having enhanced discharge capacity retention. Abe, Koji; Ueki, Akira; Hamamoto, Toshikazu (Ube Industries, Ltd., Japan). Eur. Pat. Appl. EP 1199766 A2 **20020424**, 15 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR. (English). CODEN: EPXXDW. APPLICATION: EP 2001-124312 20011019. PRIORITY: JP 2000-321146 20001020; JP 2000-335946 20001102; JP 2000-363656 20001129.

AB A discharge capacity retention of a **nonaq.** secondary **battery** is enhanced by incorporating into its **nonaq . electrolytic** soln. a small amt. of a substituted diphenyldisulfide deriv. in which each of the di-Ph groups has a substituent such as alkoxy, alkenyloxy, alkynyloxy, cycloalkyloxy, aryloxy, acyloxy, alkanesulfonyloxy, arylsulfonyloxy, alkoxycarbonyloxy, aryloxycarbonyloxy, halogen, CF3, CCl3, or CBr3. Preferably, a small amt. of Me 2-propylcarbonate, 2-propynyl methanesulfonate, 1,3-propanesultone, divinylsulfone, 1,4-butanediol dimethanesulfonate or cyclohexylbenzene is further incorporated.

IT **7791-03-9, Lithium** perchlorate **14283-07-9**
, **Lithium** tetrafluoroborate **21324-40-3,**
Lithium hexafluorophosphate **90076-65-6**
(**nonaq.** secondary **battery** having enhanced discharge capacity retention)

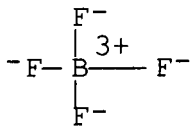
RN 7791-03-9 HCA

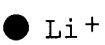
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)



RN 14283-07-9 HCA

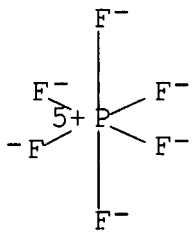
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)

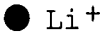




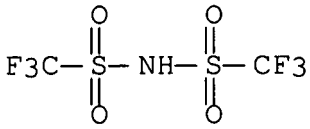
RN 21324-40-3 HCA

CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

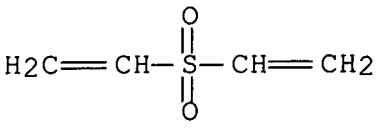




RN 90076-65-6 HCA
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:1) (CA INDEX NAME)



IT **77-77-0**, Divinylsulfone
(**nonaq.** secondary **battery** having enhanced discharge capacity retention)
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)

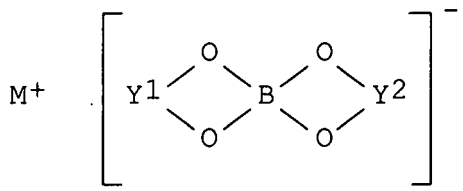


IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** secondary **nonaq electrolyte**
IT **Battery electrolytes**
Secondary **batteries**
(**nonaq.** secondary **battery** having enhanced discharge capacity retention)
IT 68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses 96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 112-48-1, 1,2-Dibutoxyethane 123-91-1, 1,4-Dioxane, uses 539-92-4, Diisobutyl carbonate 554-12-1, Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl carbonate 629-14-1, 1,2-Diethoxyethane 872-36-6, Vinylene carbonate 4437-85-8, Butylene carbonate 6482-34-4, Diisopropyl carbonate 7782-42-5, Graphite, uses **7791-03-9**, **Lithium** perchlorate 12190-79-3, Cobalt **lithium** oxide colio2 **14283-07-9**, **Lithium** tetrafluoroborate **21324-40-3**, **Lithium** hexafluorophosphate 85213-04-3, Carbonic acid, methyl (2-methylpropyl) ester **90076-65-6** 113066-89-0, Cobalt **lithium** nickel oxide Co0.2LiNi0.8O2 132404-42-3 132843-44-8 205926-54-1 205926-56-3 365454-70-2 365460-35-1 403699-22-9
(**nonaq.** secondary **battery** having enhanced discharge capacity retention)
IT 55-98-1, 1,4-Butanediol dimethanesulfonate **77-77-0**, Divinylsulfone 827-52-1, Cyclohexylbenzene 882-33-7D, Diphenyldisulfide, substituted deriv. 1120-71-4, 1,3-Propanesultone 1142-19-4, Bis(4-chlorophenyl)disulfide 5335-87-5, Bis(4-methoxyphenyl)disulfide 13153-11-2, 1,3-Propanesulfone 16156-58-4, 2-Propynyl methanesulfonate 31121-13-8, Bis(4-ethoxyphenyl)disulfide 51729-83-0, Methyl isopropyl carbonate 61764-71-4, Methyl 2-propynylcarbonate 64923-50-8, 1,3-Butanediol dimethanesulfonate
(**nonaq.** secondary **battery** having enhanced discharge capacity retention)

L58 ANSWER 17 OF 33 HCA COPYRIGHT 2007 ACS on STN

136:56441 **Electrolytic** high conductivity salts for **lithium** secondary **batteries.** Angell, Charles A.; Xu, Wu (Arizona Board of Regents, USA). PCT Int. Appl. WO 2001099209 A2 **20011227**, 28 pp. DESIGNATED STATES: W: CA, JP, KR, US; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US19359 20010618. PRIORITY: US 2000-PV212231 20000616; US 2001-PV290864 20010514.

GI

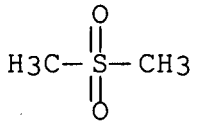


AB Orthoborate salts suitable for use as **electrolytes** in **lithium batteries** and methods for making the **electrolyte** salts are provided. The **electrolytic** salts have one of the formulas (I). In this formula anionic ortho-borate groups are capped with two bidentate chelating groups, Y1 and Y2. Certain preferred chelating groups are dibasic acid residues, most preferably oxalyl, malonyl and succinyl, disulfonic acid residues, sulfoacetic acid residues and halo-substituted alkylenes. The salts are sol. in **nonaq.** solvents and polymeric gels and are useful components of **lithium batteries** in electrochem. devices.

IT **67-71-0**, Dimethylsulfone
(**electrolytic** high cond. salts for **lithium** secondary **batteries**)

RN 67-71-0 HCA

CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)

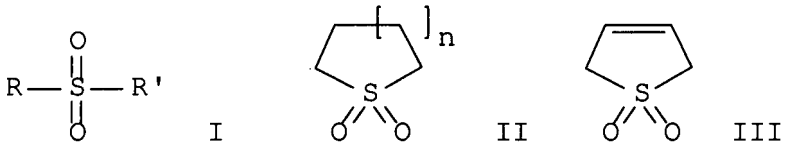


IC ICM H01M
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 29
ST **lithium battery electrolyte** high cond salt; borate salt **electrolyte lithium battery**
IT **Battery electrolytes**
Conducting polymers
Electric conductivity
(**electrolytic** high cond. salts for **lithium** secondary **batteries**)
IT Secondary **batteries**
(**lithium**; **electrolytic** high cond. salts for **lithium** secondary **batteries**)
IT 7439-93-2, **Lithium**, uses 9011-14-7, Pmma 198195-76-5, Chromium **lithium** manganese oxide Cr0.02LiMn1.98O4
(**electrolytic** high cond. salts for **lithium** secondary **batteries**)
IT 290827-01-9 383187-21-1 383187-36-8 383187-41-5
(**electrolytic** high cond. salts for **lithium** secondary **batteries**)
IT 244761-29-3P 291298-96-9P 383187-24-4P 383187-29-9P
(**electrolytic** high cond. salts for **lithium** secondary **batteries**)
IT 6867-35-2P 18294-04-7P
(**electrolytic** high cond. salts for **lithium** secondary **batteries**)
IT 67-68-5, Dmso, uses **67-71-0**, Dimethylsulfone 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 110-71-4, 1,2-Dimethoxyethane 594-43-4, Ethyl methyl sulfone 616-38-6, Dimethyl carbonate 629-14-1, 1,2-Diethoxyethane 4437-85-8, Butylene carbonate

(**electrolytic** high cond. salts for **lithium** secondary **batteries**)

L58 ANSWER 18 OF 33 HCA COPYRIGHT 2007 ACS on STN
135:109752 **Electrolyte** for **lithium** secondary **battery.** Kim, Jin-sung; Lee, Jong-wook; Kim, Kwang-sik; Kim, Young-gyu; Kim, Je-yun; Kim, Jong-seob (S. Korea). U.S. Pat. Appl. Publ. US 20010009744 A1 **20010726**, 7 pp. (English). CODEN: USXXCO. APPLICATION: US 2001-766520 20010119. PRIORITY: KR 2000-2947 20000121; KR 2000-81253 20001223.

GI



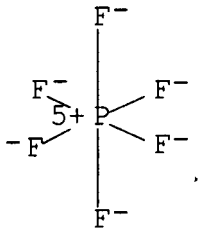
I II III

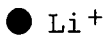
AB The title **electrolyte** includes a **nonaq.** solvent and a sulfone based org. compd. represented as in the following formulas (I), (II), or (III), or a mixt. thereof: where R and R' are independently selected from the group consisting of a primary, secondary, or tertiary alkyl group, alkenyl group, and aryl group; and a substituted primary, secondary, or tertiary alkyl group, alkenyl group, and aryl group, and n is from 0 to 3.

IT **21324-40-3, Lithium** hexafluorophosphate
(sulfone based org. compd. contg. **electrolyte** for **lithium** secondary **battery**)

RN 21324-40-3 HCA

CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

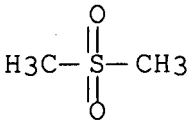




IT **67-71-0**, Methyl sulfone **77-77-0**, Vinyl sulfone **127-63-9**, Phenyl sulfone **620-32-6**, Benzyl sulfone (sulfone based org. compd. contg. **electrolyte** for **lithium** secondary **battery**)

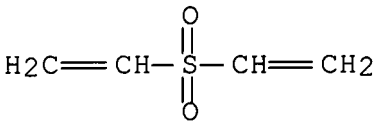
RN 67-71-0 HCA

CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



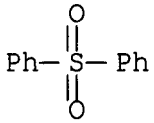
RN 77-77-0 HCA

CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)

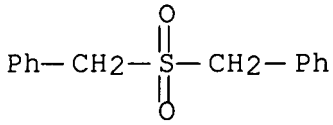


RN 127-63-9 HCA

CN Benzene, 1,1'-sulfonylbis- (CA INDEX NAME)



RN 620-32-6 HCA
CN Benzene, 1,1'-[sulfonylbis(methylene)]bis- (CA INDEX NAME)



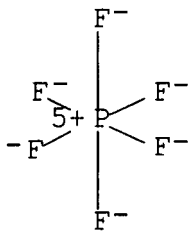
IC ICM H01M006-16
ICS H01M010-40
INCL 429326000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium battery electrolyte** sulfone based org compd
IT Transition metal oxides
(**lithiated**; sulfone based org. compd. contg. **electrolyte** for **lithium** secondary **battery**)
IT Secondary **batteries**
(**lithium**; sulfone based org. compd. contg. **electrolyte** for **lithium** secondary **battery**)
IT **Battery electrolytes**
(sulfone based org. compd. contg. **electrolyte** for **lithium** secondary **battery**)
IT Sulfones
(sulfone based org. compd. contg. **electrolyte** for **lithium** secondary **battery**)
IT **Lithium** alloy, base
(sulfone-based org. compd. contg. **electrolyte** for **lithium** secondary **battery**)

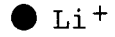
IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate
7439-93-2, **Lithium**, uses 12190-79-3, cobalt **lithium** oxide colio2 **21324-40-3**, **Lithium** hexafluorophosphate
(sulfone based org. compd. contg. **electrolyte** for **lithium** secondary **battery**)
IT **67-71-0**, Methyl sulfone 77-77-0, Vinyl sulfone
126-33-0, Tetramethylene sulfone **127-63-9**, Phenyl sulfone
383-29-9, 4-FluoroPhenyl sulfone **620-32-6**, Benzyl sulfone
28452-93-9, Butadiene sulfone
(sulfone based org. compd. contg. **electrolyte** for **lithium** secondary **battery**)

L58 ANSWER 19 OF 33 HCA COPYRIGHT 2007 ACS on STN
135:95152 **Nonaqueous-electrolyte** solution containing organic additive and **battery** using it. Yamada, Kazuhiro; Saito, Toshiya; Taki, Takayuki; Asano, Satoshi; Takatsuna, Kazutoshi (Tonen Chemical Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2001185212 A **20010706**, 8 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1999-364694 19991222.

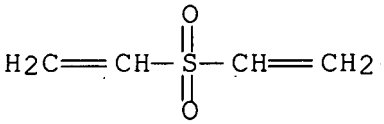
AB The **electrolyte** soln. contains ≥1 of compd. selected from thioalkylene group-contg. organosilicon compd., dialkoxysilane compd., trialkoxysilane compd., pyrrole and its deriv., pyrrolidone and its deriv., pyrrolidine and its deriv., N-contg. onium salt, S-contg. onium salt, P-contg. onium salt, unsatd. hydrocarbon-contg. sulfone compd., dialkylsulfide compd., cyclic compd. contg. ≥3 of S atoms, diketone compd., acrylate ester, methacrylate ester, carbazate compd., epoxy compd., alkenyl group-contg. oxolane, and phosphite. A **nonaq. battery** using the above **electrolyte** soln. is also claimed. The **electrolyte** soln. shows low irreversible capacity by preventing decompn. of solvents and the **battery** provides long cycle life.

IT **21324-40-3**, **Lithium** hexafluorophosphate
(**electrolyte**; **nonaq.-electrolyte** soln. contg. org. additive for **battery** having long cycle life)
RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)





IT 77-77-0
(**nonaq.-electrolyte** soln. contg. org. additive for **battery** having long cycle life)
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



IC ICM H01M010-40
ICS H01M006-16
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **nonaq electrolyte** soln additive **battery**
IT Ketones, uses
(diketones; **nonaq.-electrolyte** soln. contg. org. additive for **battery** having long cycle life)
IT Secondary **batteries**
(**lithium**; **nonaq.-electrolyte** soln. contg. org. additive for **battery** having long cycle life)
IT **Battery electrolytes**
(**nonaq.-electrolyte** soln. contg. org. additive for **battery** having long cycle life)
IT Epoxides

Phosphonium compounds
Quaternary ammonium compounds, uses
Sulfonium compounds
(**nonaq.-electrolyte** soln. contg. org.
additive for **battery** having long cycle life)

IT **21324-40-3, Lithium** hexafluorophosphate
(**electrolyte; nonaq.-electrolyte**
soln. contg. org. additive for **battery** having long
cycle life)

IT 77-77-0 88-12-0, uses 96-33-3, Methyl acrylate
106-92-3, Allyl glycidyl ether 109-97-7, Pyrrole 122-52-1
123-54-6, 2,4-Pentanedione, uses 352-93-2 429-06-1 616-45-5,
Pyrrolidone 665-49-6 872-50-4, N-Methylpyrrolidone, uses
930-35-8, 1,3-Dithiole-2-thione 2768-02-7 3984-22-3 4420-74-0
6294-89-9 16881-77-9 18165-76-9 345270-09-9
(**nonaq.-electrolyte** soln. contg. org.
additive for **battery** having long cycle life)

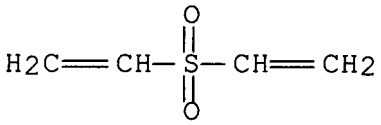
IT 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate
108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate
(solvent; **nonaq.-electrolyte** soln. contg.
org. additive for **battery** having long cycle life)

L58 ANSWER 20 OF 33 HCA COPYRIGHT 2007 ACS on STN
134:195752 **Nonaqueous electrolyte** solution and
secondary **lithium battery** using it. Hinohara,
Akio (Mitsui Chemicals Inc., Japan). Jpn. Kokai Tokkyo Koho JP
2001057234 A **20010227**, 8 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1999-232211 19990819.

AB The soln. contg. **nonaq.** solvents and **Li** salts shows leak current value 0.25 μA/mg-graphite obsd. by **Li** -graphite **battery** in **nonaq. electrolyte** soln. (3 g per 1 g graphite electrode) at 60° and 1 V for 25 h. The soln. may contain cyclic and/or linear carbonate esters and a compd. which become slightly sol. at **electrolysis.** The **battery** contains a **Li**-doping/dedoping carbon anode, a cathode, and the above soln. The **battery** shows long cycle life and storage stability at high temp.

IT **77-77-0**, Divinyl sulfone
(**nonaq. electrolyte** soln. for secondary
lithium battery with long cycle life)

RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



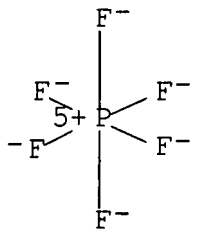
IC ICM H01M010-40
ICS H01M004-58
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **nonaq electrolyte** soln leak current
lithium battery
IT Secondary **batteries**
(**lithium**; **nonaq. electrolyte** soln.
for secondary **lithium battery** with long cycle
life)
IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate
(**nonaq. electrolyte** soln. for secondary
lithium battery with long cycle life)
IT 77-77-0, Divinyl sulfone 85-44-9, Phthalic anhydride
108-31-6, Maleic anhydride, uses 2904-41-8, Tris(carboxyethyl)
isocyanurate 4427-96-7, Vinylethylene carbonate 15896-04-5
40220-08-4, Tris(acryloyloxyethyl) isocyanurate 327181-13-5
(**nonaq. electrolyte** soln. for secondary
lithium battery with long cycle life)

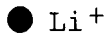
L58 ANSWER 21 OF 33 HCA COPYRIGHT 2007 ACS on STN
134:165674 **Nonaqueous electrolyte** solutions and
secondary **lithium batteries** using the
electrolyte solutions. Hamamoto, Shunichi; Ueki, Akira;
Abe, Hiroshi; Matsumori, Yasuo (Ube Industries, Ltd., Japan). Jpn.
Kokai Tokkyo Koho JP 2001043895 A **20010216**, 8 pp.
(Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-116327 20000418.
PRIORITY: JP 1999-143222 19990524.
AB The **electrolyte** solns. contain a cyclic and linear carbonate ester based solvent mixt., with the difference between the highest and the lowest redn. potentials of mixt. components smaller 0.4V. Preferably, the **electrolyte** solns. contain 0.1-4% 1,3-propanesultone and/or 0.1-4% 1,4-butanesultone and 0.1-4% vinyl carbonate.
IT **21324-40-3**, **Lithium** hexafluorophosphate
(**nonaq. electrolyte** solns. with controlled

redn. p.d. among solvent components for secondary **lithium batteries**)

RN 21324-40-3 HCA

CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

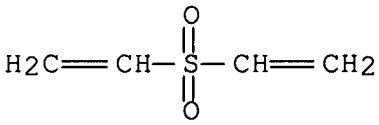




IT **77-77-0**, Divinylsulfone
(**nonaq. electrolyte** solns. with controlled redn. p.d. among solvent components for secondary **lithium batteries**)

RN 77-77-0 HCA

CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



IC ICM H01M010-40
ICS H01M004-58

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary **lithium battery electrolyte** solvent redn potential; propanesultone vinyl carbonate **lithium battery electrolyte** solvent; butanesultone vinyl carbonate **lithium battery electrolyte** solvent

IT **Battery electrolytes**

(**nonaq. electrolyte** solns. with controlled redn. p.d. among solvent components for secondary **lithium batteries**)

IT **21324-40-3**, **Lithium** hexafluorophosphate
(**nonaq. electrolyte** solns. with controlled redn. p.d. among solvent components for secondary **lithium batteries**)

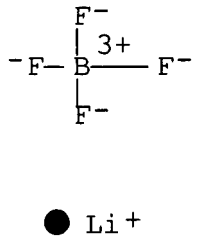
IT 55-98-1, 1,4-Butanediol dimethanesulfonate **77-77-0**, Divinylsulfone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 536-74-3, Phenylacetylene 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl carbonate 872-36-6, Vinylene carbonate 1120-71-4, 1,3-Propanesultone 1633-83-6, 1,4-Butanesultone 4672-49-5, Ethylene glycol dimethanesulfonate 51729-83-0, Methyl iso-propyl carbonate 61764-71-4, Methyl propargyl carbonate 325477-87-0
(**nonaq. electrolyte** solns. with controlled redn. p.d. among solvent components for secondary **lithium batteries**)

L58 ANSWER 22 OF 33 HCA COPYRIGHT 2007 ACS on STN
134:118407 **Nonaqueous electrolyte** solutions and secondary **lithium batteries** using the solutions.
Hamamoto, Shunichi; Abe, Hiroshi; Takai, Tsutomu; Matsumori, Yasuo
(Ube Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2001023688 A **20010126**, 5 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1999-198351 19990713.

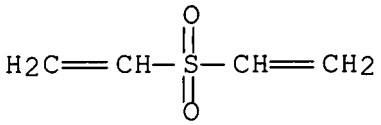
AB The **electrolyte** solns. contain LiBF4 dissolved in a cyclic carbonate ester and cyclic ester based solvent mixt., and contain vinyl sulfone derivs. RSO2CH:CH2, where R = C1-12 alkyl, C2-12 alkenyl, or C3-6 cycloalkyl groups.

IT **14283-07-9**, **Lithium** fluoroborate
(**Nonaq. electrolyte** solns. and secondary **lithium batteries** using the solns.)

RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



IT 77-77-0, Divinyl sulfone
(**Nonaq. electrolyte** solns. and secondary **lithium batteries** using the solns.)
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary **lithium battery electrolyte**
vinyl sulfone deriv
IT **Battery electrolytes**
(**Nonaq. electrolyte** solns. and secondary **lithium batteries** using the solns.)
IT 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate
14283-07-9, Lithium fluoroborate
(**Nonaq. electrolyte** solns. and secondary **lithium batteries** using the solns.)
IT 77-77-0, Divinyl sulfone 1889-59-4, Ethyl vinyl sulfone
(**Nonaq. electrolyte** solns. and secondary **lithium batteries** using the solns.)

L58 ANSWER 23 OF 33 HCA COPYRIGHT 2007 ACS on STN
134:44525 **Nonaqueous electrolyte** solutions for

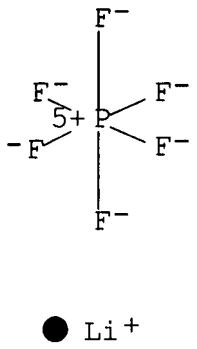
secondary **batteries.** Suzuki, Emi; Watanuki, Yusuke; Rokkaku, Takahiro; Kojima, Tetsuo; Ueda, Satao; Nakano, Minoru (Toyama Chemical Industry Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000348763 A **20001215**, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-160211 19990607.

AB **Nonaq. electrolyte** solns., for secondary **Li batteries** using carbonaceous anodes, contain a **Li** salt **electrolyte** and di-Ph sulfone or, its derivs. having halogen or alkyl group substituents at the p-positions, preferably at 0.1-10%.

IT **21324-40-3**, **Lithium** hexafluorophosphate
(**nonaq. electrolyte** solns. contg. di-Ph sulfone derivs. for secondary **lithium batteries**
)

RN 21324-40-3 HCA

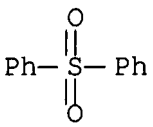
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



IT **127-63-9**, Diphenyl sulfone
(**nonaq. electrolyte** solns. contg. di-Ph sulfone derivs. for secondary **lithium batteries**
)

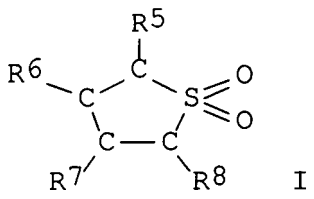
RN 127-63-9 HCA

CN Benzene, 1,1'-sulfonylbis- (CA INDEX NAME)



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST secondary **lithium battery electrolyte**
soln diphenyl sulfone
IT **Battery electrolytes**
(**nonaq. electrolyte** solns. contg. di-Ph
sulfone derivs. for secondary **lithium batteries**
)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
21324-40-3, Lithium hexafluorophosphate
(**nonaq. electrolyte** solns. contg. di-Ph
sulfone derivs. for secondary **lithium batteries**
)
IT **127-63-9**, Diphenyl sulfone
(**nonaq. electrolyte** solns. contg. di-Ph
sulfone derivs. for secondary **lithium batteries**
)

L58 ANSWER 24 OF 33 HCA COPYRIGHT 2007 ACS on STN
133:311774 **Nonaqueous electrolyte batteries**
. Morita, Seiji; Urushihara, Kanji; Naruse, Satoru; Yamashita, Tetsuya (Sanyo Electric Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000285928 A **20001013**, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-89578 19990330.
GI



I

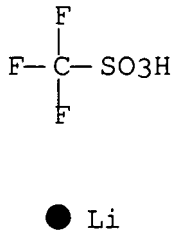
AB The **batteries** have **Li**, **Li** alloy, or **Li** intercalating carbonaceous anodes; metal oxide cathodes, and a **nonaq. electrolyte** soln. contg. a low b.p. solvent; where the **electrolyte**

soln. contains dialkyl sulfone, dialkyl sulfoxide, and/or sulfolane derivs. I, where R5-8 are H or alkyl groups.

IT **33454-82-9, Lithium** trifluoromethanesulfonate
(**nonaq. electrolyte** solns. contg. sulfones and sulfoxides and sulfolane derivs. for secondary **lithium batteries**)

RN 33454-82-9 HCA

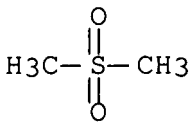
CN Methanesulfonic acid, 1,1,1-trifluoro-, lithium salt (1:1) (CA INDEX NAME)



IT **67-71-0**, Methyl sulfone
(**nonaq. electrolyte** solns. contg. sulfones and sulfoxides and sulfolane derivs. for secondary **lithium batteries**)

RN 67-71-0 HCA

CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



IC ICM H01M006-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary **lithium battery electrolyte** sulfone additive; sulfoxide additive secondary **lithium battery electrolyte**

IT **Battery electrolytes**

(**nonaq. electrolyte** solns. contg. sulfones and sulfoxides and sulfolane derivs. for secondary **lithium batteries**)

IT 96-49-1, Ethylene carbonate 110-71-4, 1,2-Dimethoxyethane 4437-85-8, Butylene carbonate **33454-82-9**, **Lithium** trifluoromethanesulfonate
(**nonaq. electrolyte** solns. contg. sulfones and sulfoxides and sulfolane derivs. for secondary **lithium batteries**)

IT 67-68-5, Methyl sulfoxide, uses **67-71-0**, Methyl sulfone 126-33-0, Sulfolane 598-04-9, Butyl sulfone 2168-93-6, Butyl sulfoxide
(**nonaq. electrolyte** solns. contg. sulfones and sulfoxides and sulfolane derivs. for secondary **lithium batteries**)

L58 ANSWER 25 OF 33 HCA COPYRIGHT 2007 ACS on STN

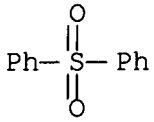
132:323925 **Nonaqueous electrolyte** solutions and secondary **lithium batteries** using them.
Hamamoto, Shunichi; Abe, Hiroshi; Takai, Tsutomu; Matsumori, Yasuo (Ube Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000133305 A **20000512**, 5 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1998-303524 19981026.

AB The **electrolyte** solns. contain sulfones R1SO2R2 (R1, R2 = Ph, benzyl, tolyl, C1-12 alkyl, C3-6 cycloalkyl). Secondary **batteries** using the **electrolyte** solns. have high capacity and long cycle life.

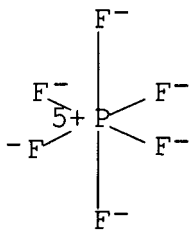
IT **127-63-9**, Diphenyl sulfone **21324-40-3**, **Lithium** hexafluorophosphate
(secondary **Li batteries** using **nonaq** . **electrolyte** solns. contg. sulfones for high capacity and long cycle life)

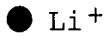
RN 127-63-9 HCA

CN Benzene, 1,1'-sulfonylbis- (CA INDEX NAME)



RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

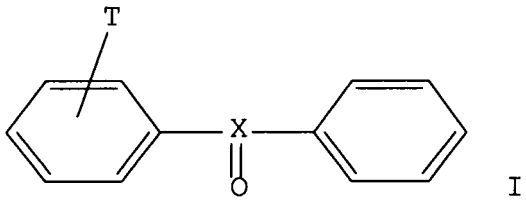




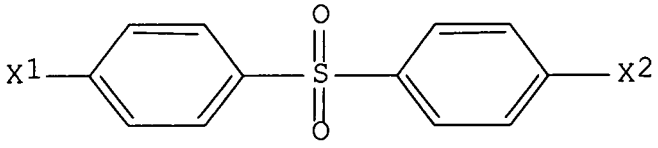
IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST sulfone **electrolyte** soln **lithium battery**
IT Secondary **batteries**
(**lithium**; secondary **Li batteries**
using **nonaq. electrolyte** solns. contg.
sulfones for high capacity and long cycle life)
IT **Battery electrolytes**
(secondary **Li batteries** using **nonaq**
. **electrolyte** solns. contg. sulfones for high capacity
and long cycle life)
IT Sulfones
(secondary **Li batteries** using **nonaq**
. **electrolyte** solns. contg. sulfones for high capacity
and long cycle life)
IT 7782-42-5, Graphite, uses
(anode; secondary **Li batteries** using
nonaq. electrolyte solns. contg. sulfones for
high capacity and long cycle life)
IT 12057-17-9, **Lithium** manganese oxide (LiMn2O4)
12190-79-3, Cobalt **lithium** oxide (CoLiO2)
(cathode; secondary **Li batteries** using
nonaq. electrolyte solns. contg. sulfones for
high capacity and long cycle life)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
127-63-9, Diphenyl sulfone 598-04-9, Dibutyl sulfone
599-66-6, Di(p-tolyl) sulfone 616-38-6, Dimethyl carbonate
21324-40-3, **Lithium** hexafluorophosphate
(secondary **Li batteries** using **nonaq**
. **electrolyte** solns. contg. sulfones for high capacity
and long cycle life)

L58 ANSWER 26 OF 33 HCA COPYRIGHT 2007 ACS on STN
130:198791 Rechargeable **lithium battery** with organic
electrolyte and carbon anode. Jehoulet, Christophe; Moteau,
Cecile (Alcatel, Fr.). Eur. Pat. Appl. EP 901180 A1
19990310, 11 pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK,
ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO.
(French). CODEN: EPXXDW. APPLICATION: EP 1998-402068 19980817.
PRIORITY: FR 1997-10822 19970829.
GI



I



II

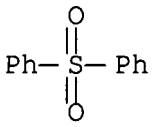
AB The **Li** secondary **battery** contains a **Li** cathode, a C anode, and an **electrolyte** contg. a **Li** salt, ≥1 **org. solvent**, and an additive. The additive is an org. compd. contg. a X atom

connected to ≥1 O atom or X-O bonds electronically conjugated with ≥1 unsatd. bond. The compd. has a general formula (I) or (II) (X = S,C; T, X1, X2 = H, R, OH, OR, NH2, NHR, SH, SR, I, F, Cl, Br; R = C1-6 alkyl; T is in the ortho- or para- position).

IT **127-63-9**, Diphenyl sulfone
(in **electrolyte** for **lithium** secondary **batteries**)

RN 127-63-9 HCA

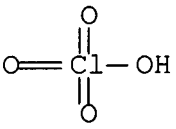
CN Benzene, 1,1'-sulfonylbis- (CA INDEX NAME)



IT **7791-03-9**, **Lithium** perchlorate **14283-07-9**, **Lithium** tetrafluoroborate **21324-40-3**, **Lithium** hexafluorophosphate **29935-35-1**, **Lithium** hexafluoroarsenate **33454-82-9**, **Lithium** trifluoromethanesulfonate **90076-65-6**
(in **electrolyte** for **lithium** secondary **batteries**)

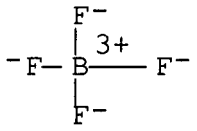
RN 7791-03-9 HCA

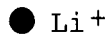
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)



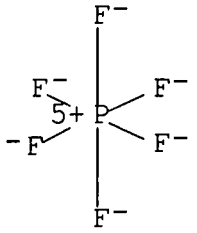
RN 14283-07-9 HCA

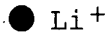
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



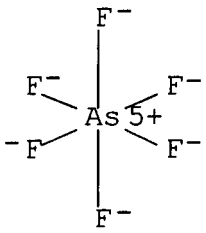


RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

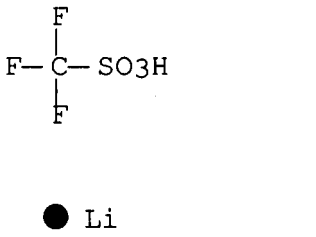




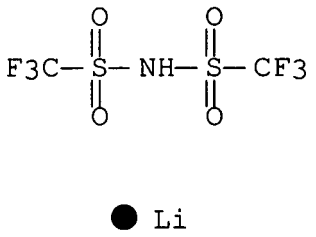
RN 29935-35-1 HCA
CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



RN 33454-82-9 HCA
CN Methanesulfonic acid, 1,1,1-trifluoro-, lithium salt (1:1) (CA INDEX NAME)



RN 90076-65-6 HCA
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:1) (CA INDEX NAME)



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery electrolyte** additive; **lithium battery electrolyte** additive carbon anode
IT **Battery electrolytes**
(additive for)
IT Secondary **batteries**
(**lithium**; rechargeable **lithium battery** with org. **electrolyte** and carbon anode)
IT **127-63-9**, Diphenyl sulfone 945-51-7, Diphenyl sulfoxide
(in **electrolyte** for **lithium** secondary **batteries**)
IT 67-68-5, Dimethylsulfoxide, uses 68-12-2, Dimethylformamide, uses

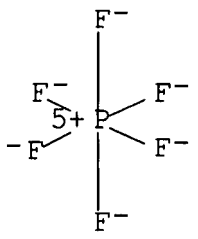
75-05-8, Acetonitrile, uses 75-56-9, uses 79-16-3,
N-Methylacetamide 96-48-0, γ-Butyrolactone 96-49-1,
Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7,
Propylene carbonate 109-99-9, uses 123-39-7, N-Methylformamide
126-33-0, Sulfolane 616-38-6, Dimethyl carbonate 616-42-2,
Dimethyl sulfite 623-96-1, Dipropyl carbonate 646-06-0,
1,3-Dioxolane 872-50-4, N-Methylpyrrolidone, uses
7791-03-9, Lithium perchlorate **14283-07-9**
, **Lithium** tetrafluoroborate **21324-40-3**,
Lithium hexafluorophosphate **29935-35-1**,
Lithium hexafluoroarsenate **33454-82-9**,
Lithium trifluoromethanesulfonate **90076-65-6**
133395-17-2
(in **electrolyte** for **lithium** secondary **batteries**)

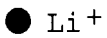
L58 ANSWER 27 OF 33 HCA COPYRIGHT 2007 ACS on STN
126:133588 **Nonaqueous electrolyte batteries**
using **electrolytes** containing self discharge inhibitors.
Jinno, Maruo; Uehara, Mayumi; Sakurai, Atsushi; Nishio, Koji; Saito, Toshihiko (Sanyo Denki Kk, Japan). Jpn. Kokai Tokkyo Koho JP 08321312 A **19961203** Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-150844 19950524.

AB **Li batteries** use **electrolytes** contg. LiCF3SO3 or LiPF6 dissolved in high dielec. const. solvent selected from ethylene carbonate, propylene carbonate, and butylene carbonate; where the **electrolytes** contain 1-20 vol.% additive selected from triethylamine, n-butylamine, aniline, tri-Me hydroxylamine, 1-dimethylamino-2-methoxy ethane, acetonitrile, acrylonitrile, 3-methoxy propionitrile, benzonitrile, nitromethane, nitroethane, N,N-dimethylacetamide, N,N-dimethylformamide, formamide, N-methyl-2-pyrrolidone, N,N'-dimethyl imidazolidinone, isoxazole, 3,5-di-Me isoxazole, 3-methyl-2-oxazolidone, 1,2,3-oxadiazole, N-Me morpholine, di-Me sulfide, Et Me sulfide, 2-Me thiophene, 1-butane thiol, benezenethiol, di-Me sulfate, di-Et sulfate, di-Me sulfite, di-Et sulfite, butadienesulfone, 3-Me sulfolene, 1,4-thioxane, phenoxathiin, 1,4-thiazine, thiomorpholine, pyridine, 1,3-dimethyl-2-imidazolidinone, DMSO, di-Me sulfone, Me Et sulfonate, and di-Me sulfinite. The **electrolytes** may contain 1,2-dimethoxyethane. Since the additives react with **Li** in anodes and the solvents and the solutes in the **electrolytes** to form coatings on the anodes for prevention of the reaction between the **electrolytes** and the anodes, the **batteries** have improved storage property. These **batteries** have long shelf life.

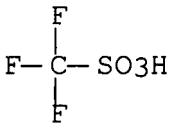
IT **21324-40-3, Lithium** hexafluorophosphate

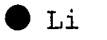
33454-82-9, Lithium trifluoromethanesulfonate
(**nonaq. electrolyte** solns. contg. self discharge inhibitors for **lithium batteries**)
RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



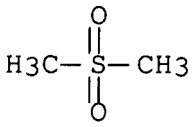


RN 33454-82-9 HCA
CN Methanesulfonic acid, 1,1,1-trifluoro-, lithium salt (1:1) (CA INDEX NAME)





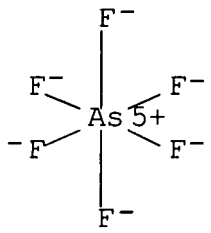
IT **67-71-0**, Dimethylsulfone
(self discharge inhibitors in **nonaq. electrolyte** solns. for **lithium batteries**)
RN 67-71-0 HCA
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



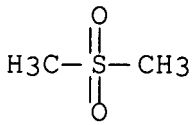
IC ICM H01M006-16
ICS H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium battery electrolyte** self discharge inhibitor
IT **Battery electrolytes**
(self discharge inhibitors in **nonaq. electrolyte** solns. for **lithium batteries**)
IT 7439-93-2, **Lithium**, uses **21324-40-3**, **Lithium** hexafluorophosphate **33454-82-9**, **Lithium** trifluoromethanesulfonate
(**nonaq. electrolyte** solns. contg. self discharge inhibitors for **lithium batteries**)
IT 62-53-3, Aniline, uses 64-67-5, Diethyl sulfate 67-68-5, Dimethylsulfoxide, uses **67-71-0**, Dimethylsulfone 68-12-2, N,N-Dimethylformamide, uses 75-05-8, Acetonitrile, uses 75-12-7, Formamide, uses 75-18-3, Dimethylsulfide 75-52-5, Nitromethane, uses 77-78-1, Dimethyl sulfate 79-24-3, Nitroethane 80-73-9, N,N'-Dimethylimidazolidinone 100-47-0, Benzonitrile, uses 107-13-1, Acrylonitrile, uses 108-98-5, Benzenethiol, uses 109-02-4, N-Methylmorpholine 109-73-9, n-Butylamine, uses 109-79-5, 1-Butanethiol 110-67-8, 3-Methoxypropionitrile 110-86-1, Pyridine, uses 121-44-8, Triethylamine, uses 123-90-0, Thiomorpholine 127-19-5, N,N-Dimethylacetamide 262-20-4, Phenoxathiin 288-14-2, Isoxazole 288-43-7, 1,2,3-Oxadiazole 290-56-2, 1,4-Thiazine 290-57-3, 1,4-Thiazine 300-87-8, 3,5-Dimethylisoxazole 554-14-3, 2-Methylthiophene 616-42-2, Dimethyl sulfite 623-81-4, Diethyl sulfite 624-89-5, Ethylmethylsulfide 666-15-9 872-50-4, N-Methyl-2-pyrrolidone, uses 1193-10-8, 3-Methylsulfolene 1912-28-3, Methyl ethyl sulfonate 3030-44-2 5669-39-6, Trimethylhydroxylamine 15980-15-1, 1,4-Thioxane 19836-78-3

28452-93-9, Butadienesulfone
(self discharge inhibitors in **nonaq.** **electrolyte** solns. for **lithium** **batteries**)
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
110-71-4, 1,2-Dimethoxyethane 4437-85-8, Butylene carbonate
(solvents for **nonaq. electrolyte** solns. contg. self discharge inhibitors for **lithium** **batteries**)

L58 ANSWER 28 OF 33 HCA COPYRIGHT 2007 ACS on STN
121:160817 Thermal **lithium battery.** Crepy, Gilles; Mahieu, Gerard; Mimoun, Michel (SAFT SA, Fr.). Fr. Demande FR 2697676 A1 **19940506**, 15 pp. (French). CODEN: FRXXBL. APPLICATION: FR 1992-12958 19921029.
AB The **battery** contains a **Li** or **Li** alloy anode, a S and oxides cathode and **electrolyte** contg. **Li** salts at 0.5-3.0 mol **Li** salt/kg DMS.
IT **29935-35-1**, **Lithium** hexafluoroarsenate
(**electrolyte**, in **nonaq.** thermal **lithium battery**)
RN 29935-35-1 HCA
CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



IT **67-71-0**, Dimethylsulfone
(solvent, in **nonaq.** thermal **lithium** **battery**)
RN 67-71-0 HCA
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



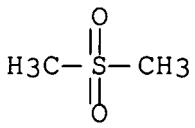
IC ICM H01M006-36
ICS H01M006-20
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium battery nonaq** thermal
IT Carbon black, uses
(cathode contg., in **nonaq.** thermal **lithium battery**)
IT **Batteries**, primary
(thermal, **lithium, nonaq.**)
IT **lithium** alloy, base
(anode, in **nonaq.** thermal **lithium battery**)
IT 7439-93-2, **Lithium**, uses
(anode, in **nonaq.** thermal **lithium battery**)
IT 1313-13-9, Manganese dioxide, uses 1314-62-1, Vanadium pentoxide, uses 7704-34-9, Sulfur, uses 12068-85-8, Iron sulfide (fes2)
(cathode contg., in **nonaq.** thermal **lithium battery**)
IT 7447-41-8, **Lithium** chloride, uses 7550-35-8, **Lithium** bromide 7789-24-4, **Lithium** fluoride, uses **29935-35-1**, **Lithium** hexafluoroarsenate
(**electrolyte**, in **nonaq.** thermal **lithium battery**)
IT 1309-48-4, Magnesia, uses 1344-28-1, Alumina, uses 10043-11-5, Boron nitride, uses
(in **nonaq.** thermal **lithium battery**)
IT **67-71-0**, Dimethylsulfone
(solvent, in **nonaq.** thermal **lithium battery**)

L58 ANSWER 29 OF 33 HCA COPYRIGHT 2007 ACS on STN

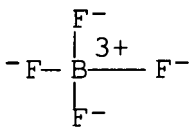
115:186786 Secondary **nonaqueous batteries.**
Watanabe, Hiroshi; Yoshimura, Seiji; Furukawa, Sanehiro (Sanyo Electric Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 03152879 A **19910628** Heisei, 8 pp. (Japanese). CODEN: JKXXAF.
APPLICATION: JP 1989-290222 19891108.

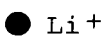
AB Secondary **Li batteries** use **electrolytes** comprising solvents contg. SO groups and **Li** salts of F-contg. Lewis acids. The **batteries** have high storage stability and long cycle life. A 1M F3CSO3Li/50:50 (vol.) 3-methylsulfolane-MeOCH2CH2OMe **electrolyte** soln. was used for **Li**-Al/Mn oxide **batteries.**

IT **67-71-0**, Dimethylsulfone
(**electrolyte** solvent mixts. contg., for secondary **lithium batteries**)
RN 67-71-0 HCA
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)

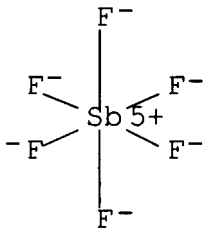


IT **14283-07-9**, **Lithium** tetrafluoroborate
18424-17-4, **Lithium** hexafluoroantimonate
21324-40-3, **Lithium** hexafluorophosphate
29935-35-1, **Lithium** hexafluoroarsenate
33454-82-9, **Lithium** trifluoromethanesulfonate
(**electrolyte**, solvent mixts. for, in secondary **lithium batteries**)
RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



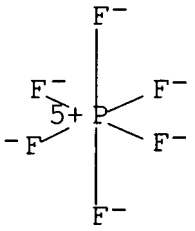


RN 18424-17-4 HCA
CN Antimonate(1-), hexafluoro-, lithium (1:1), (OC-6-11)- (CA INDEX NAME)



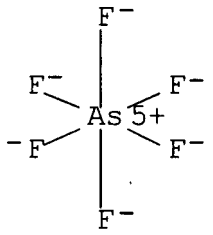
● Li⁺

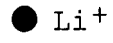
RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



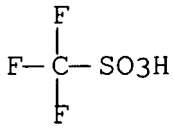
● Li⁺

RN 29935-35-1 HCA
CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)





RN 33454-82-9 HCA
CN Methanesulfonic acid, 1,1,1-trifluoro-, lithium salt (1:1) (CA INDEX NAME)



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium battery lithium** trifluoromethanesulfonate **electrolyte**; methylsulfolane **electrolyte** solvent **lithium battery**
IT **Batteries**, secondary
(**lithium**, **electrolyte** solvents and salts in, for storage stability and cycle life)
IT 67-68-5, Dimethylsulfoxide, uses and miscellaneous **67-71-0**, Dimethylsulfone 126-33-0, Sulfolane 616-42-2, Dimethylsulfite 872-93-5, 3-Methylsulfolane
(**electrolyte** solvent mixts. contg., for secondary **lithium batteries**)
IT **14283-07-9**, **Lithium** tetrafluoroborate

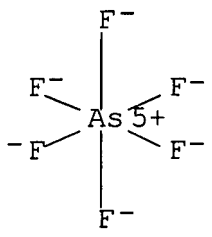
18424-17-4, Lithium hexafluoroantimonate
21324-40-3, Lithium hexafluorophosphate
29935-35-1, Lithium hexafluoroarsenate
33454-82-9, Lithium trifluoromethanesulfonate
(**electrolyte**, solvent mixts. for, in secondary **lithium batteries**)

L58 ANSWER 30 OF 33 HCA COPYRIGHT 2007 ACS on STN
108:153639 **Nonaqueous** sulfur dioxide-based **electrolyte** for **batteries.** Gabano, Jean Paul; Sarradin, Joel; Messina, Richard; Perichon, Jacques (Societe des Accumulateurs Fixes et de Traction (SAFT), Fr.). Eur. Pat. Appl. EP 252494 A1 **19880113**, 7 pp. DESIGNATED STATES: R: DE, FR, GB, IT, SE. (French). CODEN: EPXXDW. APPLICATION: EP 1987-109801 19870707. PRIORITY: FR 1986-10096 19860710.

AB The **nonaq. battery electrolyte** contains SO2, 1-6M dimethylsulfone, and 0.5-2M metal salt (LiCl or LiAsF6). A **Li battery** with a spinally wound porous C cathode on an expanded Al grid, a **Li** foil anode, and a microporous Celgard film separator, all immersed in an **electrolyte** soln. contg. liq. SO2 (.apprx.30 cm3/component), 3M dimethylsulfone, and 0.5M LiCl, had an open-circuit voltage of 2.9 v. The **battery** has a capacity of 5.5A-h at 25° and discharge current of 1A and very small electrode polarization.

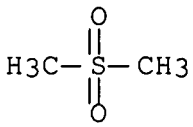
IT **29935-35-1, Lithium** hexafluoroarsenate (LiAsF6)
(catholytes contg. dimethylsulfone and, sulfur dioxide, in **lithium batteries**)

RN 29935-35-1 HCA
CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



● Li^+

IT **67-71-0**, Dimethylsulfone
(catholytes contg. **lithium** salt and, sulfur dioxide, in **lithium batteries**)
RN 67-71-0 HCA
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



IC ICM H01M006-14
ICS H01M010-36
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
ST **lithium** sulfur dioxide **battery**
electrolyte; **electrolyte** dimethylsulfone
lithium salt **battery**
IT **Electrolytic** polarization
(in **lithium batteries** with dimethylsulfone-**lithium** salt **nonaq. electrolytes**)
IT **Batteries**, secondary
(**lithium**-sulfur dioxide, dimethylsulfone-**lithium** salt **electrolytes** in)
IT 7447-41-8, **Lithium** chloride, uses and miscellaneous
29935-35-1, **Lithium** hexafluoroarsenate (LiAsF6)
(catholytes contg. dimethylsulfone and, sulfur dioxide, in **lithium batteries**)
IT **67-71-0**, Dimethylsulfone
(catholytes contg. **lithium** salt and, sulfur dioxide, in **lithium batteries**)
IT 7446-09-5, Sulfur dioxide, uses and miscellaneous
(catholytes, contg. dimethylsulfone and **lithium** salt and, in **lithium batteries**)

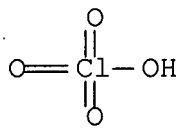
L58 ANSWER 31 OF 33 HCA COPYRIGHT 2007 ACS on STN
107:220471 Investigation of **lithium** intercalation materials with **organic solvents** and molten salts as

electrolytes at temperatures between 60 and 175°.
Pereira-Ramos, Jean Pierre; Messina, Richard; Piolet, Colette; Devynck, Jacques (Lab. Electrochim., Catal. Synth. Org., CNRS, Thiais, 94320, Fr.). Journal of Power Sources, 20(3-4), 221-30 (English) **1987.** CODEN: JPSODZ. ISSN: 0378-7753.

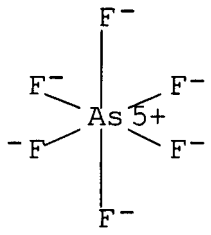
AB **Li** intercalation in TiS2 and V oxides (V2O5, VO4, V2O3) was investigated in (1) molten chloroaluminates (butylpyridinium chloride-AlCl3-LiCl) at 60° and LiAlCl4-LiCl (satd.) at 175° and (2) Me2SO2 + LiClO4 or LiAsF6 at 130-150°. The intercalation process was studied by cyclic voltammetry, galvanostatic discharge/charge, and open-circuit voltage measurements. In chloroaluminates, TiS2 is stable in both media, with a 1-step intercalation at 0.40 V (60°) or 0.65 V (175°) (vs. Al ref.). V2O5 can only be cycled at a low temp. (60°), and 2 steps are obsd. at .apprx.1 V and 0.45 V. In Me2SO2, V2O5 intercalates .apprx.2.5 **Li**+/unit V2O5, with 4 steps, as obsd. in propylene carbonate (PC). The open-circuit voltage (OCV) measurements at different intercalation steps indicate that the effect of temp. increases the kinetics of the processes. A comparison of the OCV variations with **Li**+ concn. in Me2SO2 and PC suggests that the intercalation process differs in both solvents. The difference can be correlated with changes in the **Li**+ solvation effects of the solvents.

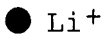
IT **7791-03-9**, **Lithium** perchlorate **29935-35-1**
, **Lithium** hexafluoroarsenate
(**electrolytes**, in molten di-Me sulfone, **lithium** intercalation in, for reversible **lithium batteries**)

RN 7791-03-9 HCA
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)

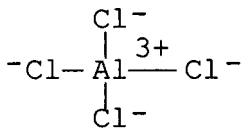


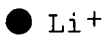
RN 29935-35-1 HCA
CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



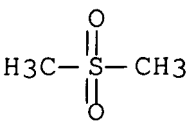


IT **14024-11-4, Lithium** tetrachloroaluminate
(**lithium** intercalation in, for reversible **lithium batteries**)
RN 14024-11-4 HCA
CN Aluminate(1-), tetrachloro-, lithium (1:1), (T-4)- (CA INDEX NAME)





IT **67-71-0**, Dimethylsulfone
(molten **electrolytes**, contg. **lithium** salts, **lithium** intercalation in, for reversible **lithium batteries**)
RN 67-71-0 HCA
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



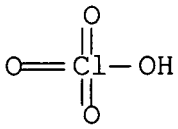
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
ST **lithium** intercalation cathode **battery**; titanium sulfide **lithium** intercalation cathode; vanadium oxide **lithium** intercalation cathode; chloroaluminate **lithium** intercalation cathode; methyl sulfone **lithium** salt cathode
IT **Batteries**, secondary
(**lithium**-vanadium pentoxide, contg. di-Me sulfone-**lithium** perchlorate **electrolyte**, performance of)
IT Inclusion reaction
(intercalation, electrochem., of **lithium**, in titanium sulfide and vanadium oxides, in **batteries**, with **org. solvents** and molten salts)
IT **7791-03-9**, **Lithium** perchlorate **29935-35-1**, **Lithium** hexafluoroarsenate
(**electrolytes**, in molten di-Me sulfone, **lithium** intercalation in, for reversible **lithium batteries**)
IT 11126-15-1P, **Lithium** vanadium oxide 12680-08-9P, **Lithium** titanium sulfide
(intercalated, formation of, in **org. solvents** and molten salt **electrolytes**, temp. effect on, for reversible **lithium batteries**)
IT **14024-11-4**, **Lithium** tetrachloroaluminate 67226-46-4
(**lithium** intercalation in, for reversible **lithium batteries**)
IT 1314-34-7, Vanadium oxide (V2O3) 1314-62-1, Vanadium oxide (V2O5), uses and miscellaneous 12036-21-4 12039-13-3
(**lithium** intercalation in, in **org. solvents** and molten salt **electrolytes**, temp. effect on, for reversible **lithium batteries**)
IT **67-71-0**, Dimethylsulfone
(molten **electrolytes**, contg. **lithium** salts, **lithium** intercalation in, for reversible **lithium batteries**)

L58 ANSWER 32 OF 33 HCA COPYRIGHT 2007 ACS on STN
105:137122 **Battery** with a **nonaqueous**
electrolyte. Gabano, Jean Paul; Broussely, Michel;
Pereira-Ramos, Jean Pierre; Messina, Richard; Perichon, Jacques
(Societe des Accumulateurs Fixes et de Traction (SAFT), Fr.). Eur.
Pat. Appl. EP 189891 A1 **19860806**, 10 pp. DESIGNATED
STATES: R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE. (French).
CODEN: EPXXDW. APPLICATION: EP 1986-101075 19860128. PRIORITY: FR
1985-1309 19850130.

AB The **battery** consists of an anode selected from alkali metals, alk. earth metals, and Al; a cathode selected from CuO, Cu4O(PO4)2, graphite fluoride, MnO2, V2O5, MoS3, TiS2, V2S5, V6O13, MoS2, NiPS3; and ≥1 linear aliph. or arom. sulfone **electrolyte** solvent, e.g., dimethylsulfone. The possible solvents are eutectic mixts. detd. from binary or ternary diagrams. When **Li** or **Li**-Al anode is used, the **electrolyte** solute is LiClO4, LiBF4, LiCF3SO3, LiAlCl4, or LiAsF6. The **battery** may be used at 100-200°. Sp. conductivities of these **Li** salts in dimethylsulfone at 150 and 107° as function fo concn. are given.

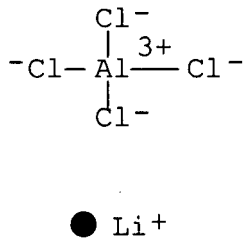
IT **7791-03-9 14024-11-4 14283-07-9**
29935-35-1 33454-82-9
(elec. cond. of, in dimethylsulfone, for **battery**
electrolytes, temp. effect on)

RN 7791-03-9 HCA
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)

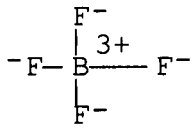


● Li

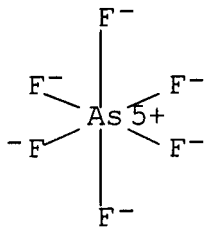
RN 14024-11-4 HCA
CN Aluminate(1-), tetrachloro-, lithium (1:1), (T-4)- (CA INDEX NAME)



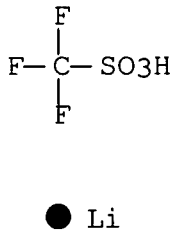
RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



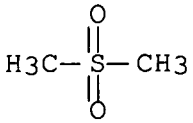
RN 29935-35-1 HCA
CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



RN 33454-82-9 HCA
CN Methanesulfonic acid, 1,1,1-trifluoro-, lithium salt (1:1) (CA INDEX NAME)



IT **67-71-0**
(**electrolyte** contg., for **lithium batteries**)
RN 67-71-0 HCA
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



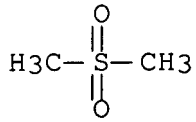
IC ICM H01M006-16
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76
ST **lithium** org **electrolyte battery**; dimethylsulfone **electrolyte lithium battery**; elec cond **lithium** salt; perchlorate **lithium** elec cond; fluoroborate **lithium** elec cond; chloroaluminate **lithium** elec cond; fluoarsenate **lithium** elec cond; trifluoromethanesulfonate **lithium** elec cond
IT **Batteries**, primary
(**lithium**, with **electrolyte** contg. dimethylsulfone)
IT Electric conductivity and conduction
(of **lithium** salt in dimethylsulfone, for **battery electrolytes**, temp. effect on)

IT 1314-62-1, uses and miscellaneous 1317-38-0, uses and miscellaneous
(cathodes, for org. **electrolyte batteries**)
IT **7791-03-9 14024-11-4 14283-07-9 29935-35-1 33454-82-9**
(elec. cond. of, in dimethylsulfone, for **battery electrolytes**, temp. effect on)
IT **67-71-0**
(**electrolyte** contg., for **lithium batteries**)

L58 ANSWER 33 OF 33 HCA COPYRIGHT 2007 ACS on STN
105:14129 Electrochemical behavior of some transition metal oxides in molten dimethyl sulfone at 150°C. Pereira-Ramos, J. P.; Messina, R.; Perichon, J. (Lab. Electrochim. Org., Univ. Paris Val de Marne, Creteil, 94010, Fr.). Journal of Applied Electrochemistry, 16(3), 379-86 (English) **1986.** CODEN: JAELBJ. ISSN: 0021-891X.

AB In view of the possible application to **non-aq. Li** cells operating at relatively high temps., fused di-Me sulfone (DMSO2) was used as the **electrolyte** solvent in **Li** cells at 150°. The stability of **Li** in DMSO2 melt was good as compared with that obsd. in **org. solvents** such as propylene carbonate, thus indicating that the **Li+/Li** system can be used as a suitable ref. electrode in this medium. The electrochem. behavior of some transition metal oxides was investigated in LiClO4 solns. in DMSO2 melts. The results obtained from voltammetric and chronopotentiometric measurements showed a satisfactory behavior for all the cathodic materials tested. Moreover, electrochem. insertion of **Li+** into the crystal lattice of these oxides is a very fast process. Thus DMSO2 melt appears to be a very interesting **org. solvent** usable in high energy d. **non -aq. Li** cells.

IT **67-71-0**
(transition metal oxide electrochem. reactions in **lithium** perchlorate-contg. melts of)
RN 67-71-0 HCA
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



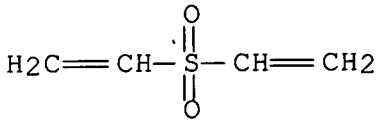
CC 72-3 (Electrochemistry)
Section cross-reference(s): 52
ST **lithium battery** transition metal oxide; cathode **battery** transition metal oxide; **electrolyte battery** methyl sulfone solvent
IT Transition metal oxides
(electrochem. reactions of, in di-Me sulfone-contg. **lithium** perchlorate, **battery** in relation to)
IT Cathodes
(**battery**, transition metal oxides)
IT 7439-93-2, uses and miscellaneous
(anodes, in **nonaq. batteries** with transition metal oxides in di-Me sulfone melts contg. **lithium** perchlorate)
IT 1313-13-9, reactions 1313-27-5, reactions 1314-62-1, reactions
(electrochem. reactions of, in di-Me sulfone-contg. **lithium** perchlorate, **battery** in relation to)
IT **67-71-0**
(transition metal oxide electrochem. reactions in **lithium** perchlorate-contg. melts of)

=> D L50 1-6 CBIB ABS HITSTR HITIND

L50 ANSWER 1 OF 6 HCA COPYRIGHT 2007 ACS on STN
146:145946 **Electrolyte** for **lithium** secondary **battery.** Kim, Cheonsoo (Samsung Sdi Co., Ltd., S. Korea).
U.S. Pat. Appl. Publ. US 2007009806 A1 20070111, 11pp. (English).
CODEN: USXXCO. APPLICATION: US 2006-481911 20060707. PRIORITY: KR 2005-61409 20050707.

AB The invention concerns an **electrolyte** for a **lithium** secondary **battery** and a **lithium** secondary **battery** having the **electrolyte**, the **electrolyte** including a **lithium** salt; a **non-aq. org. solvent** including γ-butyrolactone-; and a succinic anhydride.

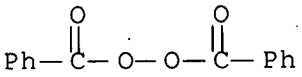
IT **77-77-0**, Divinyl sulfone
(**electrolyte** for **lithium** secondary **battery**)
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



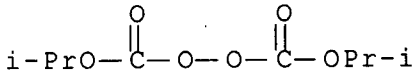
IT **94-36-0**, Dibenzoyl peroxide, reactions **105-64-6**, Di-isopropyl peroxydicarbonate **105-74-8**, Dilauroyl peroxide **107-71-1**, tert-Butyl peroxy acetate **109-13-7**, tert-Butyl peroxy isobutyrate **110-22-5**, Diacetyl peroxide **614-45-9**, tert-Butyl peroxy benzoate **686-31-7**, tert-Amylperoxy 2-ethyl hexanoate **927-07-1** , tert-Butyl peroxypivalate **2372-21-6**, tert-Butyl peroxy isopropyl carbonate **3006-82-4**, tert-Butylperoxy-2-ethyl hexanoate **3851-87-4**, Bis(3,5,5-trimethylhexanoyl) peroxide **13122-18-4 15518-51-1**, Diethylene glycol bis(tert-butyl peroxycarbonate) **15520-11-3**, Bis(4-tert-butylcyclohexyl) peroxydicarbonate **16111-62-9**, Di-2-ethylhexyl peroxy dicarbonate **26748-38-9**, tert-Butyl peroxy neoheptanoate **29240-17-3**, tert-Amyl peroxypivalate **34443-12-4**, tert-Butyl peroxy-2-ethylhexyl carbonate

36536-42-2 52238-68-3 68860-54-8
(electrolyte for lithium secondary battery)

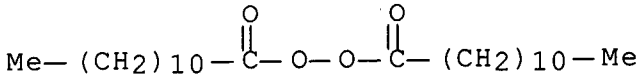
RN 94-36-0 HCA
CN Peroxide, dibenzoyl (CA INDEX NAME)



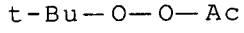
RN 105-64-6 HCA
CN Peroxydicarbonic acid, C,C'-bis(1-methylethyl) ester (CA INDEX NAME)



RN 105-74-8 HCA
CN Peroxide, bis(1-oxododecyl) (CA INDEX NAME)

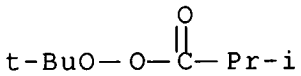


RN 107-71-1 HCA
CN Ethaneperoxoic acid, 1,1-dimethylethyl ester (CA INDEX NAME)

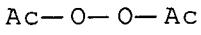


RN 109-13-7 HCA
CN Propaneperoxoic acid, 2-methyl-, 1,1-dimethylethyl ester (CA INDEX

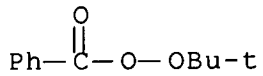
NAME)



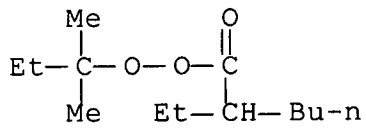
RN 110-22-5 HCA
CN Peroxide, diacetyl (CA INDEX NAME)



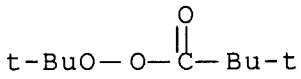
RN 614-45-9 HCA
CN Benzenecarboperoxoic acid, 1,1-dimethylethyl ester (CA INDEX NAME)



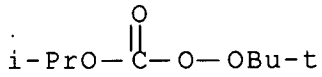
RN 686-31-7 HCA
CN Hexaneperoxoic acid, 2-ethyl-, 1,1-dimethylpropyl ester (CA INDEX NAME)



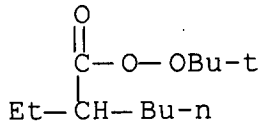
RN 927-07-1 HCA
CN Propaneperoxoic acid, 2,2-dimethyl-, 1,1-dimethylethyl ester (CA INDEX NAME)



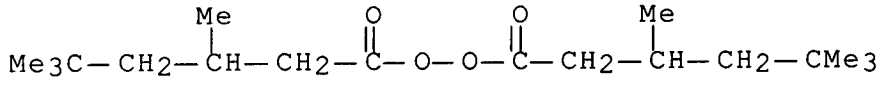
RN 2372-21-6 HCA
CN Carbonoperoxoic acid, OO-(1,1-dimethylethyl) O-(1-methylethyl) ester (CA INDEX NAME)



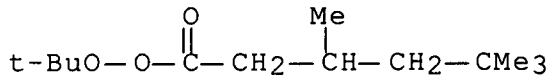
RN 3006-82-4 HCA
CN Hexaneperoxoic acid, 2-ethyl-, 1,1-dimethylethyl ester (CA INDEX NAME)



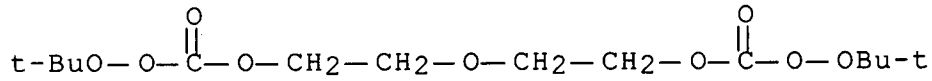
RN 3851-87-4 HCA
CN Peroxide, bis(3,5,5-trimethyl-1-oxohexyl) (CA INDEX NAME)



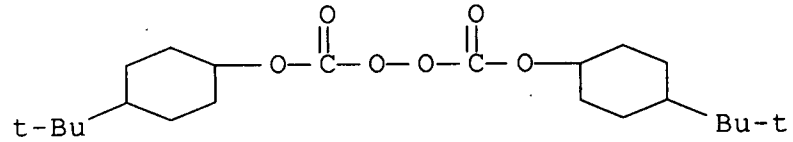
RN 13122-18-4 HCA
CN Hexaneperoxoic acid, 3,5,5-trimethyl-, 1,1-dimethylethyl ester (CA INDEX NAME)



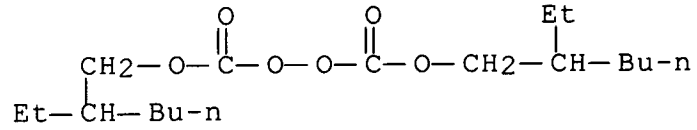
RN 15518-51-1 HCA
CN 2,5,8,10,11-Pentaoxatridecaneperoxoic acid, 12,12-dimethyl-9-oxo-, 1,1-dimethylethyl ester (CA INDEX NAME)



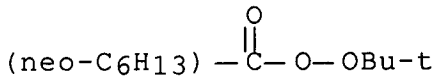
RN 15520-11-3 HCA
CN Peroxydicarbonic acid, C,C'-bis[4-(1,1-dimethylethyl)cyclohexyl] ester (CA INDEX NAME)



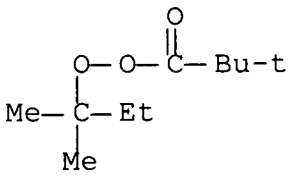
RN 16111-62-9 HCA
CN Peroxydicarbonic acid, C,C'-bis(2-ethylhexyl) ester (CA INDEX NAME)



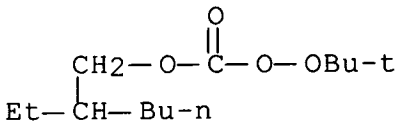
RN 26748-38-9 HCA
CN Neoheptaneperoxoic acid, 1,1-dimethylethyl ester (CA INDEX NAME)



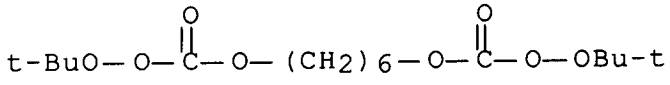
RN 29240-17-3 HCA
CN Propaneperoxoic acid, 2,2-dimethyl-, 1,1-dimethylpropyl ester (CA INDEX NAME)



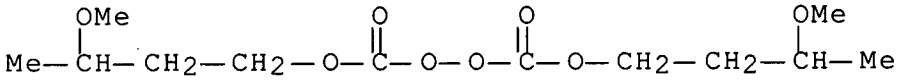
RN 34443-12-4 HCA
CN Carbonoperoxoic acid, OO-(1,1-dimethylethyl) O-(2-ethylhexyl) ester (CA INDEX NAME)



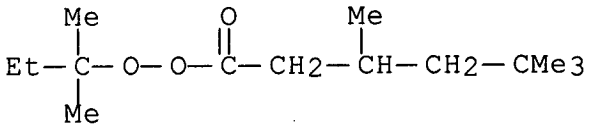
RN 36536-42-2 HCA
CN Carbonoperoxoic acid, O,O'-1,6-hexanediyl OO,OO'-bis(1,1-dimethylethyl) ester (CA INDEX NAME)



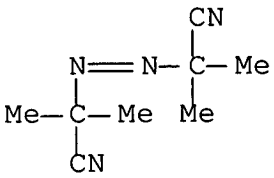
RN 52238-68-3 HCA
CN Peroxydicarbonic acid, C,C'-bis(3-methoxybutyl) ester (CA INDEX NAME)



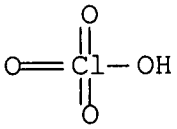
RN 68860-54-8 HCA
CN Hexaneperoxoic acid, 3,5,5-trimethyl-, 1,1-dimethylpropyl ester (CA INDEX NAME)



IT **78-67-1**, 2,2'-Azo-bis(isobutyronitrile) **7791-03-9**, **Lithium** perchlorate **10377-51-2**, **Lithium** iodide **14024-11-4**, **Lithium** tetrachloroaluminate **14283-07-9**, **Lithium** tetrafluoroborate **18424-17-4**, **Lithium** hexafluoroantimonate **21324-40-3**, **Lithium** hexafluorophosphate **29935-35-1**, **Lithium** hexafluoroarsenate **33454-82-9**, **Lithium** triflate **90076-65-6** **131651-65-5**
(**electrolyte** for **lithium** secondary **battery**)
RN 78-67-1 HCA
CN Propanenitrile, 2,2'-(1,2-diazenediyl)bis[2-methyl- (CA INDEX NAME)

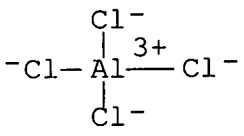


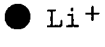
RN 7791-03-9 HCA
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)



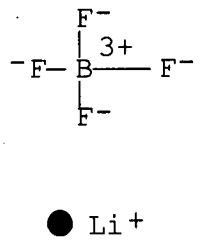
RN 10377-51-2 HCA
CN Lithium iodide (LiI) (CA INDEX NAME)

RN 14024-11-4 HCA
CN Aluminate(1-), tetrachloro-, lithium (1:1), (T-4)- (CA INDEX NAME)

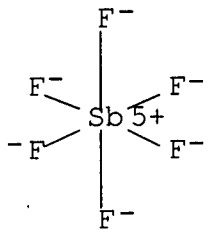


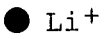


RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)

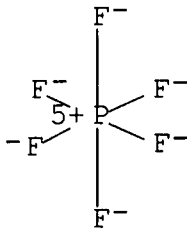


RN 18424-17-4 HCA
CN Antimonate(1-), hexafluoro-, lithium (1:1), (OC-6-11)- (CA INDEX NAME)

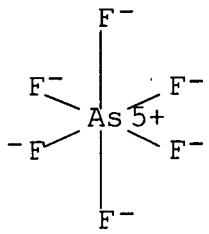




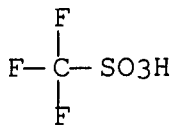
RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



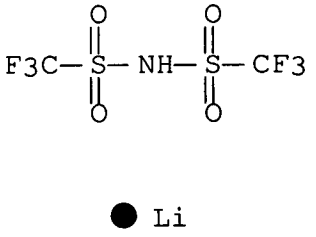
RN 29935-35-1 HCA
CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



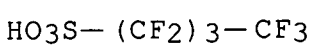
RN 33454-82-9 HCA
CN Methanesulfonic acid, 1,1,1-trifluoro-, lithium salt (1:1) (CA INDEX NAME)



RN 90076-65-6 HCA
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:1) (CA INDEX NAME)



RN 131651-65-5 HCA
CN 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt (1:1) (CA INDEX NAME)



INCL 429329000; 429332000; 429200000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **electrolyte lithium** secondary **battery**
IT **Battery electrolytes**
(electrolyte for **lithium** secondary **battery)**
IT Aromatic hydrocarbons, uses
Esters, uses
Ethers, uses
Ketones, uses
(electrolyte for **lithium** secondary **battery)**
IT Secondary **batteries**
(lithium; electrolyte for **lithium**

secondary **battery**)

IT 77-77-0, Divinyl sulfone 96-48-0, γ-Butyrolactone 108-30-5, Succinic anhydride, uses 872-36-6, Vinylene carbonate 3741-38-6, Ethylene sulfite 25721-76-0, Poly(ethylene glycol)dimethacrylate 26570-48-9, Poly(ethylene glycol)diacrylate 413569-08-1 919110-87-5
(**electrolyte** for **lithium** secondary **battery**)

IT **94-36-0**, Dibenzoyl peroxide, reactions **105-64-6**, Di-isopropyl peroxydicarbonate **105-74-8**, Dilauroyl peroxide **107-71-1**, tert-Butyl peroxy acetate **109-13-7**, tert-Butyl peroxy isobutyrate **110-22-5**, Diacetyl peroxide **614-45-9**, tert-Butyl peroxy benzoate **686-31-7**, tert-Amylperoxy 2-ethyl hexanoate **927-07-1**, tert-Butyl peroxypivalate **2372-21-6**, tert-Butyl peroxy isopropyl carbonate **3006-82-4**, tert-Butylperoxy-2-ethyl hexanoate **3851-87-4**, Bis(3,5,5-trimethylhexanoyl) peroxide **13122-18-4** **15518-51-1**, Diethylene glycol bis(tert-butyl peroxycarbonate) **15520-11-3**, Bis(4-tert-butylcyclohexyl) peroxydicarbonate **16111-62-9**, Di-2-ethylhexyl peroxy dicarbonate **26748-38-9**, tert-Butyl peroxy neoheptanoate **29240-17-3**, tert-Amyl peroxypivalate **34443-12-4**, tert-Butyl peroxy-2-ethylhexyl carbonate **36536-42-2** 51938-28-4, tert-Hexyl peroxypivalate **52238-68-3** **68860-54-8** 919110-90-0
(**electrolyte** for **lithium** secondary **battery**)

IT 71-43-2, Benzene, uses **78-67-1**, 2,2'-Azo-bis(isobutyronitrile) 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 108-67-8, Mesitylene, uses 108-86-1, Bromobenzene, uses 108-88-3, Toluene, uses 108-90-7, Chlorobenzene, uses 462-06-6, Fluorobenzene 463-79-6D, Carbonic acid, ester 616-38-6, Dimethyl carbonate 623-53-0, EthylMethyl carbonate 623-96-1, Dipropyl carbonate 1330-20-7, Xylene, uses 2094-98-6 4419-11-8, 2,2'-Azo-bis(2,4-dimethyl valeronitrile) 4437-70-1, 2,3-Butylene carbonate 4437-85-8, 1,2-Butylene carbonate 4437-86-9 7447-41-8, **Lithium** chloride, uses **7791-03-9**, **Lithium** perchlorate **10377-51-2**, **Lithium** iodide **14024-11-4**, **Lithium** tetrachloroaluminate

14283-07-9, Lithium tetrafluoroborate
18424-17-4, Lithium hexafluoroantimonate
21324-40-3, Lithium hexafluorophosphate
29935-35-1, Lithium hexafluoroarsenate
33454-82-9, Lithium triflate 35363-40-7,
Ethylpropyl carbonate 37220-89-6, Aluminum **lithium** oxide
56525-42-9, Methylpropyl carbonate 89489-56-5, 1,2-Pentylene
carbonate **90076-65-6** 114435-02-8, Fluoroethylene
carbonate **131651-65-5**
(**electrolyte** for **lithium** secondary
battery)

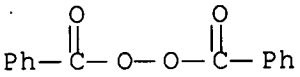
L50 ANSWER 2 OF 6 HCA COPYRIGHT 2007 ACS on STN
142:264348 **Electrolyte** for rechargeable **lithium**
battery. Lee, Yong-Beom; Song, Eui-Hwan; Kim, Kwang-Sup;
Earmme, Tae-Shik; Kim, You-Mee (Samsung SDI Co., Ltd., S. Korea).
Eur. Pat. Appl. EP 1508934 A1 20050223, 32 pp. DESIGNATED STATES:
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR.
(English). CODEN: EPXXDW. APPLICATION: EP 2004-90320 20040819.
PRIORITY: KR 2003-57716 20030820; KR 2004-5874 20040129.

AB Disclosed is an **electrolyte** for a rechargeable **lithium battery**, including a mixt. of **org . solvents** including a cyclic solvent and a nitrile-based solvent represented by the formula R-C.tplbond.N (R is from C1-10 aliph. hydrocarbons, C1-10 halogenated aliph. hydrocarbons, C6-10 arom. hydrocarbons, and C6-10 halogenated arom. hydrocarbons) and a **lithium** salt.

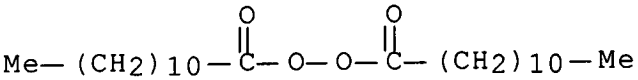
IT **94-36-0**, Dibenzoyl peroxide, processes **105-74-8**,
Dilauroyl peroxide **107-71-1**, tert-Butylperoxy acetate
109-13-7, tert-Butylperoxyisobutyrate **110-22-5**,
Diacetyl peroxide **614-45-9**, tert-Butylperoxy benzoate
686-31-7, tert-Amylperoxy 2-ethylhexanoate **927-07-1**
, tert-Butyl peroxypivalate **2372-21-6**, tert-Butyl peroxy
isopropyl carbonate **3006-82-4**, tert-Butyl peroxy-2-ethyl
hexanoate **3851-87-4**, Bis(3,5,5-trimethyl)hexanoyl peroxide
13122-18-4, tert-Butylperoxy 3,5,5-trimethylhexanoate
15518-51-1, Diethylene glycol bis(tert-butylperoxycarbonate)
15520-11-3, Di(4-tert-butylcyclohexyl)peroxydicarbonate
26748-38-9, tert-Butyl peroxy neoheptanoate
26748-41-4, tert-Butyl peroxy neodecanoate
29240-17-3, tert-Amyl peroxypivalate **34443-12-4**,

tert-Butyl peroxy 2-ethylhexyl carbonate **36536-42-2**,
1,6-Hexanediol bis(tert-butyl peroxycarbonate) **51240-95-0**,
1,1,3,3-Tetramethylbutyl peroxy neodecanoate **52238-68-3**,
Bis(3-methoxybutyl) peroxydicarbonate **68860-54-8**
96989-15-0
(**electrolyte** for rechargeable **lithium battery**)

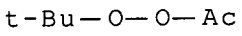
RN 94-36-0 HCA
CN Peroxide, dibenzoyl (CA INDEX NAME)



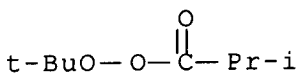
RN 105-74-8 HCA
CN Peroxide, bis(1-oxododecyl) (CA INDEX NAME)



RN 107-71-1 HCA
CN Ethaneperoxoic acid, 1,1-dimethylethyl ester (CA INDEX NAME)

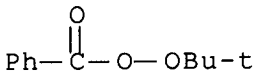


RN 109-13-7 HCA
CN Propaneperoxoic acid, 2-methyl-, 1,1-dimethylethyl ester (CA INDEX NAME)

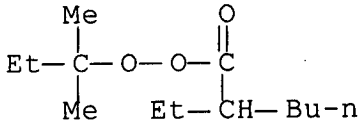


RN 110-22-5 HCA
CN Peroxide, diacetyl (CA INDEX NAME)

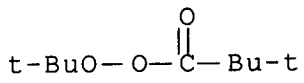
RN 614-45-9 HCA
CN Benzenecarboperoxoic acid, 1,1-dimethylethyl ester (CA INDEX NAME)



RN 686-31-7 HCA
CN Hexaneperoxoic acid, 2-ethyl-, 1,1-dimethylpropyl ester (CA INDEX NAME)

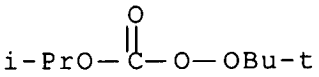


RN 927-07-1 HCA
CN Propaneperoxoic acid, 2,2-dimethyl-, 1,1-dimethylethyl ester (CA INDEX NAME)

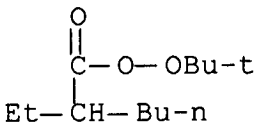


RN 2372-21-6 HCA

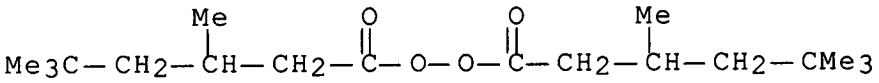
CN Carbonoperoxoic acid, OO-(1,1-dimethylethyl) O-(1-methylethyl) ester (CA INDEX NAME)



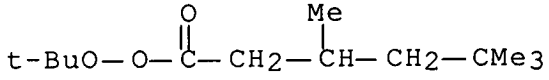
RN 3006-82-4 HCA
CN Hexaneperoxoic acid, 2-ethyl-, 1,1-dimethylethyl ester (CA INDEX NAME)



RN 3851-87-4 HCA
CN Peroxide, bis(3,5,5-trimethyl-1-oxohexyl) (CA INDEX NAME)

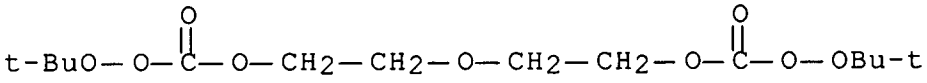


RN 13122-18-4 HCA
CN Hexaneperoxoic acid, 3,5,5-trimethyl-, 1,1-dimethylethyl ester (CA INDEX NAME)

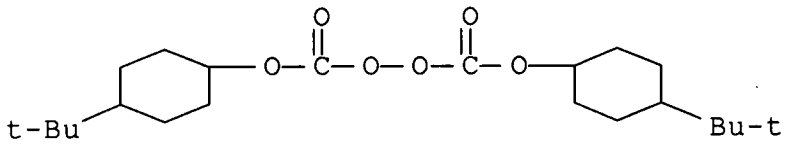


RN 15518-51-1 HCA

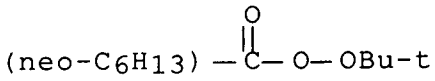
CN 2,5,8,10,11-Pentaoxatridecaneperoxoic acid, 12,12-dimethyl-9-oxo-, 1,1-dimethylethyl ester (CA INDEX NAME)



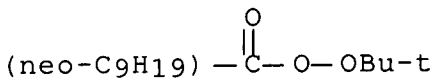
RN 15520-11-3 HCA
CN Peroxydicarbonic acid, C,C'-bis[4-(1,1-dimethylethyl)cyclohexyl] ester (CA INDEX NAME)



RN 26748-38-9 HCA
CN Neoheptaneperoxoic acid, 1,1-dimethylethyl ester (CA INDEX NAME)

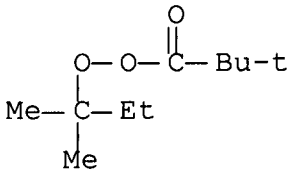


RN 26748-41-4 HCA
CN Neodecaneperoxoic acid, 1,1-dimethylethyl ester (CA INDEX NAME)

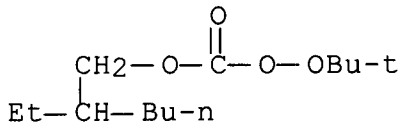


RN 29240-17-3 HCA

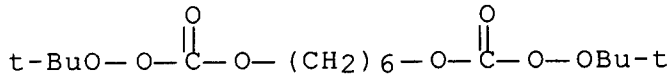
CN Propaneperoxoic acid, 2,2-dimethyl-, 1,1-dimethylpropyl ester (CA INDEX NAME)



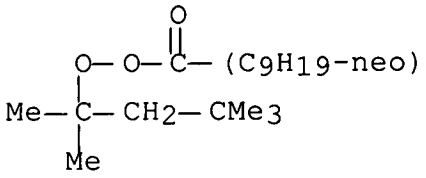
RN 34443-12-4 HCA
CN Carbonoperoxoic acid, OO-(1,1-dimethylethyl) O-(2-ethylhexyl) ester (CA INDEX NAME)



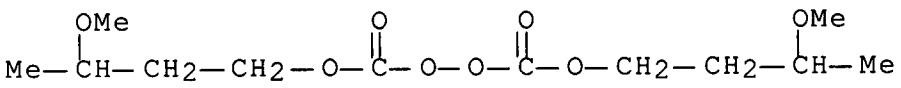
RN 36536-42-2 HCA
CN Carbonoperoxoic acid, O,O'-1,6-hexanediyl OO,OO'-bis(1,1-dimethylethyl) ester (CA INDEX NAME)



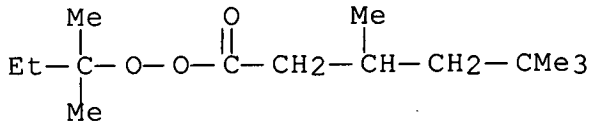
RN 51240-95-0 HCA
CN Neodecaneperoxoic acid, 1,1,3,3-tetramethylbutyl ester (CA INDEX NAME)



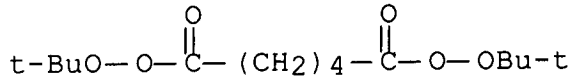
RN 52238-68-3 HCA
CN Peroxydicarbonic acid, C,C'-bis(3-methoxybutyl) ester (CA INDEX NAME)



RN 68860-54-8 HCA
CN Hexaneperoxoic acid, 3,5,5-trimethyl-, 1,1-dimethylpropyl ester (CA INDEX NAME)



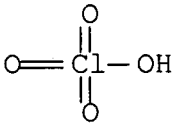
RN 96989-15-0 HCA
CN Hexanediperoxoic acid, trimethyl-, bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



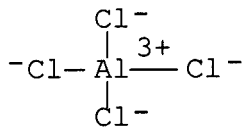
3 (D1—Me)

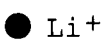
IT **7791-03-9, Lithium** perchlorate **14024-11-4**
, **Lithium** tetrachloroaluminate **14283-07-9**,
Lithium tetrafluoroborate **18424-17-4**,
Lithium hexafluoroantimonate **21324-40-3**,
Lithium hexafluorophosphate **29935-35-1**,
Lithium hexafluoroarsenate **33454-82-9**,
Lithium triflate **90076-65-6 845717-45-5**
(**electrolyte** for rechargeable **lithium battery**)

RN 7791-03-9 HCA
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)

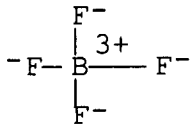


RN 14024-11-4 HCA
CN Aluminate(1-), tetrachloro-, lithium (1:1), (T-4)- (CA INDEX NAME)

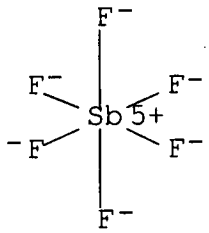


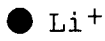


RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)

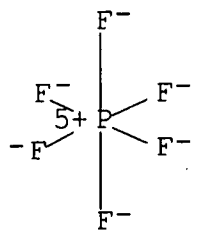


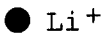
RN 18424-17-4 HCA
CN Antimonate(1-), hexafluoro-, lithium (1:1), (OC-6-11)- (CA INDEX NAME)



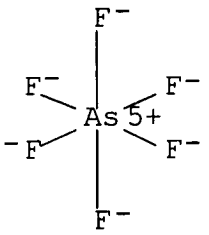


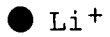
RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



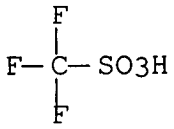


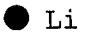
RN 29935-35-1 HCA
CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



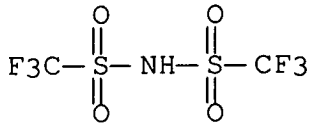


RN 33454-82-9 HCA
CN Methanesulfonic acid, 1,1,1-trifluoro-, lithium salt (1:1) (CA INDEX NAME)





RN 90076-65-6 HCA
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:1) (CA INDEX NAME)

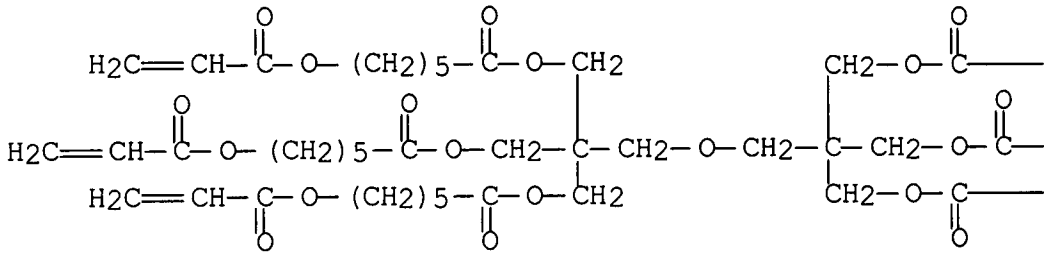


RN 845717-45-5 HCA
CN Hexanoic acid, 6-[(1-oxo-2-propenyl)oxy]-, 2-[[3-[[1-oxo-6-[(1-oxo-2-propenyl)oxy]hexyl]oxy]-2,2-bis[[[1-oxo-6-[(1-oxo-2-propenyl)oxy]hexyl]oxy]methyl]propoxy]methyl]-2-[[[1-oxo-6-[(1-oxo-2-propenyl)oxy]hexyl]oxy]methyl]-1,3-propanediyl ester, polymer with bis[4-(1,1-dimethylethyl)cyclohexyl] peroxydicarbonate (9CI) (CA INDEX NAME)

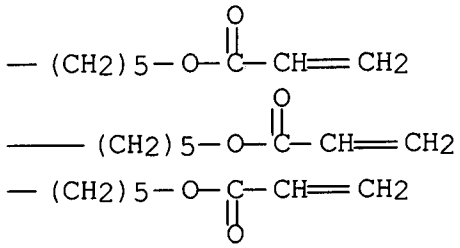
CM 1

CRN 93294-97-4
CMF C64 H94 O25

PAGE 1-A

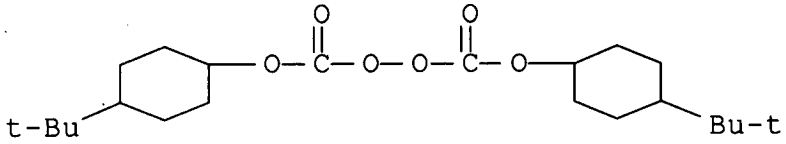


PAGE 1-B

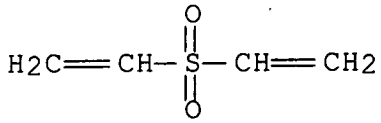


CM 2

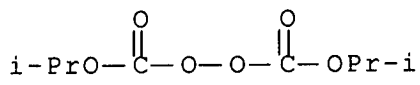
CRN 15520-11-3
CMF C22 H38 O6



IT **77-77-0**, DiVinyl sulfone **105-64-6**, Di-isopropylperoxydicarbonate **16111-62-9**, Bis(2-ethylhexyl) peroxydicarbonate **22537-94-6** (**electrolyte** for rechargeable **lithium battery**)
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)

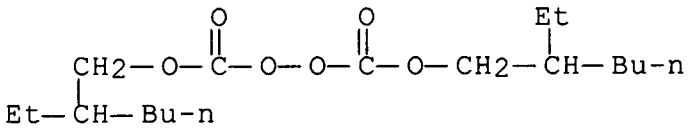


RN 105-64-6 HCA
CN Peroxydicarbonic acid, C,C'-bis(1-methylethyl) ester (CA INDEX NAME)

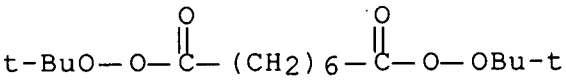


RN 16111-62-9 HCA

CN Peroxydicarbonic acid, C,C'-bis(2-ethylhexyl) ester (CA INDEX NAME)



RN 22537-94-6 HCA
CN Octanediperoxoic acid, bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **electrolyte** rechargeable **lithium battery**
IT Nitriles, uses
(aliph., C1-10; **electrolyte** for rechargeable **lithium battery**)
IT Nitriles, uses
(arom., C6-10; **electrolyte** for rechargeable **lithium battery**)
IT **Battery electrolytes**
(**electrolyte** for rechargeable **lithium battery**)
IT Lactones
(**electrolyte** for rechargeable **lithium battery**)
IT Secondary **batteries**
(**lithium**; **electrolyte** for rechargeable **lithium battery**)
IT Peroxides, uses

(org.; **electrolyte** for rechargeable **lithium** **battery**)

IT **94-36-0**, Dibenzoyl peroxide, processes **105-74-8**, Dilauroyl peroxide **107-71-1**, tert-Butylperoxy acetate **109-13-7**, tert-Butylperoxyisobutyrate **110-22-5**, Diacetyl peroxide **614-45-9**, tert-Butylperoxy benzoate **686-31-7**, tert-Amylperoxy 2-ethylhexanoate **927-07-1** , tert-Butyl peroxypivalate **2372-21-6**, tert-Butyl peroxy isopropyl carbonate **3006-82-4**, tert-Butyl peroxy-2-ethyl hexanoate **3851-87-4**, Bis(3,5,5-trimethyl)hexanoyl peroxide 4419-11-8, 2,2'-Azobis(2,4-dimethylvaleronitrile) **13122-18-4** , tert-Butylperoxy 3,5,5-trimethylhexanoate **15518-51-1**, Diethylene glycol bis(tert-butylperoxycarbonate) **15520-11-3** , Di(4-tert-butylcyclohexyl)peroxydicarbonate 25551-14-8 **26748-38-9**, tert-Butyl peroxy neoheptanoate **26748-41-4**, tert-Butyl peroxy neodecanoate **29240-17-3**, tert-Amyl peroxypivalate **34443-12-4**, tert-Butyl peroxy 2-ethylhexyl carbonate **36536-42-2**, 1,6-Hexanediol bis(tert-butyl peroxycarbonate) **51240-95-0**, 1,1,3,3-Tetramethylbutyl peroxy neodecanoate 51938-28-4, tert-Hexylperoxypivalate **52238-68-3**, Bis(3-methoxybutyl) peroxydicarbonate **68860-54-8** **96989-15-0** 845717-44-4

(**electrolyte** for rechargeable **lithium** **battery**)

IT 79-20-9, Methyl acetate 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 106-70-7, Methyl hexanoate 107-12-0, Propionitrile 107-31-3, Methyl formate 108-29-2, γ-Valerolactone 108-32-7, Propylene carbonate 109-74-0, Butyronitrile 110-59-8, Valeronitrile 124-12-9, Caprylonitrile 140-29-4, Phenylacetonitrile 141-78-6, Ethyl acetate, uses 326-62-5, 2-FluoroPhenylacetonitrile 394-47-8, 2-Fluorobenzonitrile 459-22-3, 4-FluoroPhenylacetonitrile 502-44-3, ε-Caprolactone 542-28-9, δ-Valerolactone 542-52-9, Dibutyl carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 629-08-3, Heptanenitrile 630-18-2, tert-Butyl cyanide 695-06-7, γ-Caprolactone 766-05-2, Cyclohexanecarbonitrile 1194-02-1, 4-Fluorobenzonitrile 4254-02-8,

Cyclopentanecarbonitrile 4437-85-8, Butylene carbonate 7439-93-2D, **Lithium**, salt **7791-03-9**, **Lithium** perchlorate 12190-79-3, Cobalt **lithium** oxide (CoLiO2) **14024-11-4**, **Lithium** tetrachloroaluminate **14283-07-9**, **Lithium** tetrafluoroborate **18424-17-4**, **Lithium** hexafluoroantimonate **21324-40-3**, **Lithium** hexafluorophosphate **29935-35-1**, **Lithium** hexafluoroarsenate **33454-82-9**, **Lithium** triflate 57381-51-8, 4-Chloro-2-fluoro-benzonitrile 60702-69-4, 2-Chloro-4-fluoro-benzonitrile **90076-65-6** 90240-74-7 127813-79-0 132843-44-8 179802-95-0, Cobalt **lithium** manganese nickel oxide (Co0.1LiMn0.1Ni0.8O2) **845717-45-5**
(**electrolyte** for rechargeable **lithium** **battery**)

IT 75-05-8, Acetonitrile, uses 77-77-0, DiVinyl sulfone **105-64-6**, Di-isopropylperoxydicarbonate 628-73-9, Capronitrile 872-36-6, Vinylene carbonate 3741-38-6, Ethylene sulfite **16111-62-9**, Bis(2-ethylhexyl) peroxydicarbonate **22537-94-6** 71331-99-2, Bis(4-tert-butylcyclohexyl)peroxycarbonate 114435-02-8, Fluoroethylene carbonate
(**electrolyte** for rechargeable **lithium** **battery**)

L50 ANSWER 3 OF 6 HCA COPYRIGHT 2007 ACS on STN

140:238483 **Electrolyte** for a **lithium battery**

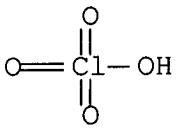
. Park, Yong-Chul; Jung, Won-Ii; Kim, Geun-Bae; Cho, Jae-Phil; Jung, Cheol-Soo (S. Korea). U.S. Pat. Appl. Publ. US 2004048163 A1 20040311, 13 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-656086 20030905. PRIORITY: KR 2002-53879 20020906.

AB An **electrolyte** for a **lithium battery** includes a **nonaq. org. solvent**, a **lithium** salt, and an additive comprising (a) a sulfone-based compd. and (b) a C3-30 org. peroxide or azo-based compd. The **electrolyte** may further include a poly(ester)(meth)acrylate or a polymer that is derived from a (polyester)polyol with at least three hydroxyl (-OH) groups, where a portion or all of the hydroxyl groups are substituted with a (meth)acrylic ester and the remaining hydroxyl groups that are not substituted with the (meth)acrylic ester are substituted with a group having no radical reactivity. The **lithium battery** comprising the **electrolyte** of the present invention has a significantly improved charge-

discharge and cycle life characteristics, recovery capacity ratio at high temp., and swelling inhibition properties.

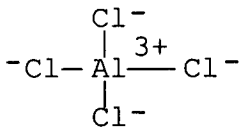
IT **7791-03-9**, **Lithium** perchlorate **10377-51-2**
, **Lithium** iodide (LiI) **14024-11-4**,
Lithium tetrachloroaluminate **14283-07-9**,
Lithium tetrafluoroborate **18424-17-4**,
Lithium hexafluoroantimonate **21324-40-3**,
Lithium hexafluorophosphate **29935-35-1**,
Lithium hexafluoroarsenate **33454-82-9**,
Lithium triflate **39300-70-4**, **Lithium**
nickel oxide **90076-65-6 131651-65-5**,
Lithium nonafluorobutanesulfonate **162684-16-4**,
Lithium manganese nickel oxide **193215-00-8**, Cobalt
lithiummanganese nickel oxide Co0.1LiMn0.2Ni0.7O2
(**electrolyte** for **lithium battery**)

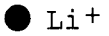
RN 7791-03-9 HCA
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)



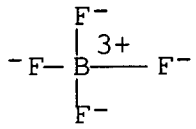
RN 10377-51-2 HCA
CN Lithium iodide (LiI) (CA INDEX NAME)

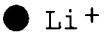
RN 14024-11-4 HCA
CN Aluminate(1-), tetrachloro-, lithium (1:1), (T-4)- (CA INDEX NAME)



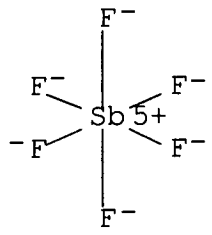


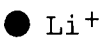
RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



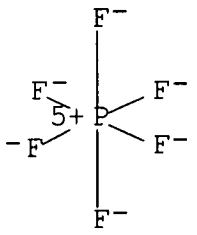


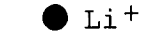
RN 18424-17-4 HCA
CN Antimonate(1-), hexafluoro-, lithium (1:1), (OC-6-11)- (CA INDEX NAME)



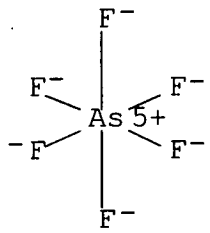


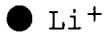
RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



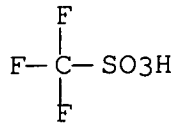


RN 29935-35-1 HCA
CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)





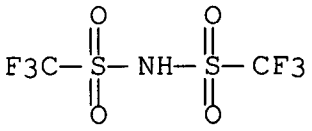
RN 33454-82-9 HCA
CN Methanesulfonic acid, 1,1,1-trifluoro-, lithium salt (1:1) (CA INDEX NAME)



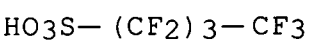
RN 39300-70-4 HCA
CN Lithium nickel oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Ni	x	7440-02-0
Li	x	7439-93-2

RN 90076-65-6 HCA
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:1) (CA INDEX NAME)



RN 131651-65-5 HCA
CN 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt (1:1) (CA INDEX NAME)



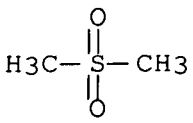
RN 162684-16-4 HCA
CN Lithium manganese nickel oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Ni	x	7440-02-0
Mn	x	7439-96-5
Li	x	7439-93-2

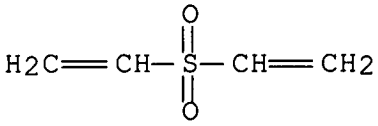
RN 193215-00-8 HCA
CN Cobalt lithium manganese nickel oxide (Co0.1LiMn0.2Ni0.7O2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.1	7440-48-4
Ni	0.7	7440-02-0
Mn	0.2	7439-96-5
Li	1	7439-93-2

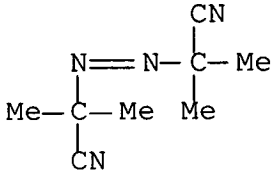
IT **67-71-0**, Methyl sulfone **77-77-0**, Vinyl sulfone
78-67-1, 2,2'-**Azobisisobutyronitrile**
94-36-0, Benzoyl peroxide, uses **105-64-6**,
Diisopropyl peroxy dicarbonate **105-74-8**, Lauroyl peroxide
127-63-9, Phenyl sulfone **620-32-6**, Benzyl sulfone
1561-49-5, Dicyclohexylperoxy dicarbonate **1712-87-4**
, m-Toluoyl peroxide **3006-82-4**, tert-Butylperoxy-2-ethyl hexanoate **14666-78-5 15520-11-3**,
Bis(4-tert-butylcyclohexyl)peroxy dicarbonate **26748-41-4**
32752-09-3, Isobutyl peroxide **92177-99-6**,
3,3,5-Trimethylhexanoyl peroxide
(**electrolyte** for **lithium battery**)
RN 67-71-0 HCA
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



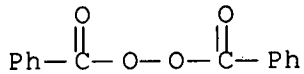
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



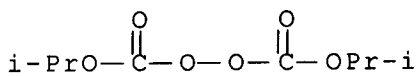
RN 78-67-1 HCA
CN Propanenitrile, 2,2'-(1,2-diazenediyl)bis[2-methyl- (CA INDEX NAME)



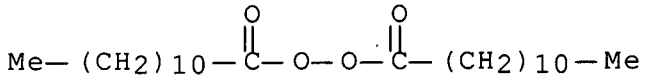
RN 94-36-0 HCA
CN Peroxide, dibenzoyl (CA INDEX NAME)



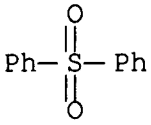
RN 105-64-6 HCA
CN Peroxydicarbonic acid, C,C'-bis(1-methylethyl) ester (CA INDEX NAME)



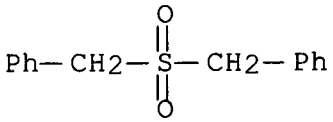
RN 105-74-8 HCA
CN Peroxide, bis(1-oxododecyl) (CA INDEX NAME)



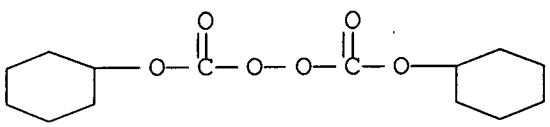
RN 127-63-9 HCA
CN Benzene, 1,1'-sulfonylbis- (CA INDEX NAME)



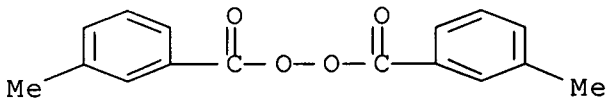
RN 620-32-6 HCA
CN Benzene, 1,1'-[sulfonylbis(methylene)]bis- (CA INDEX NAME)



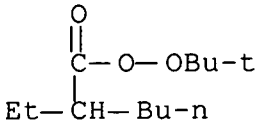
RN 1561-49-5 HCA
CN Peroxydicarbonic acid, C,C'-dicyclohexyl ester (CA INDEX NAME)



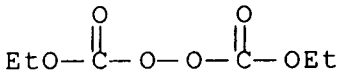
RN 1712-87-4 HCA
CN Peroxide, bis(3-methylbenzoyl) (9CI) (CA INDEX NAME)



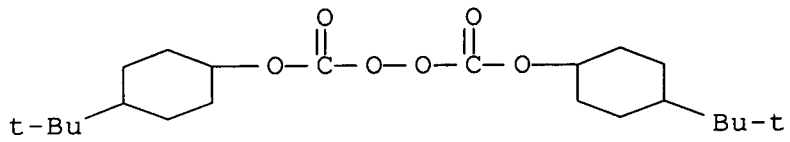
RN 3006-82-4 HCA
CN Hexaneperoxoic acid, 2-ethyl-, 1,1-dimethylethyl ester (CA INDEX NAME)



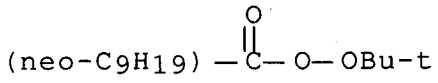
RN 14666-78-5 HCA
CN Peroxydicarbonic acid, diethyl ester (CA INDEX NAME)



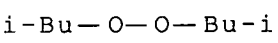
RN 15520-11-3 HCA
CN Peroxydicarbonic acid, C,C'-bis[4-(1,1-dimethylethyl)cyclohexyl] ester (CA INDEX NAME)



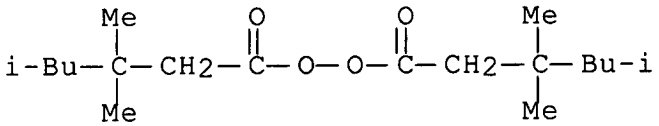
RN 26748-41-4 HCA
CN Neodecaneperoxoic acid, 1,1-dimethylethyl ester (CA INDEX NAME)



RN 32752-09-3 HCA
CN Peroxide, bis(2-methylpropyl) (CA INDEX NAME)



RN 92177-99-6 HCA
CN Peroxide, bis(3,3,5-trimethyl-1-oxohexyl) (9CI) (CA INDEX NAME)



IC ICM H01M010-40
INCL 429326000; 429329000; 429339000; 429340000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **lithium battery electrolyte**
IT **Battery electrolytes**
(electrolyte for lithium battery)
IT Aromatic hydrocarbons, uses
Carbonates, uses
Esters, uses
Ethers, uses

Ketones, uses
(**electrolyte** for **lithium battery**)
IT Azo compounds
(**electrolyte** for **lithium battery**)
IT Carbonaceous materials (technological products)
(**electrolyte** for **lithium battery**)
IT Sulfones
(**electrolyte** for **lithium battery**)
IT Polyesters, uses
(hydroxy-terminated; **electrolyte** for **lithium battery**)
IT Secondary **batteries**
(**lithium**; **electrolyte** for **lithium battery**)
IT Polyesters, uses
(methacrylate; **electrolyte** for **lithium battery**)
IT Peroxides, uses
(org., C3-30; **electrolyte** for **lithium battery**)
IT Esters, uses
(poly-; **electrolyte** for **lithium battery**)
IT Imides
Sulfonic acids, uses
(sulfonimides, perfluoro derivs., **lithium** salts; **electrolyte** for **lithium battery**)
IT 56-81-5, Glycerol, uses 71-43-2, Benzene, uses 96-49-1, Ethylene carbonate 98-95-3, Nitrobenzene, uses 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 108-88-3, Toluene, uses 108-90-7, Chlorobenzene, uses 149-32-6, Erythritol 462-06-6, Fluorobenzene 616-38-6, Dimethyl carbonate 623-53-0, Methylethyl carbonate 623-96-1, Dipropyl carbonate 1330-20-7, Xylene, uses 4437-85-8, Butylene carbonate 7790-99-0, Iodine chloride (ICl) **7791-03-9**, **Lithium** perchlorate **10377-51-2**, **Lithium** iodide (LiI) **14024-11-4**, **Lithium** tetrachloroaluminate **14283-07-9**, **Lithium** tetrafluoroborate **18424-17-4**, **Lithium** hexafluoroantimonate **21324-40-3**, **Lithium** hexafluorophosphate 27359-10-0, Trifluorotoluene

29935-35-1, Lithium hexafluoroarsenate
33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl carbonate, uses **39300-70-4, Lithium** nickel oxide 56525-42-9, Methyl propyl carbonate, uses **90076-65-6 131651-65-5, Lithium** nonafluorobutanesulfonate **162684-16-4, Lithium** manganese nickel oxide **193215-00-8**, Cobalt lithiummanganese nickel oxide Co0.1LiMn0.2Ni0.7O2
(**electrolyte** for **lithium battery**)

IT **67-71-0**, Methyl sulfone **77-77-0**, Vinyl sulfone **78-67-1**, 2,2'-**Azobisisobutyronitrile** **94-36-0**, Benzoyl peroxide, uses **105-64-6**, Diisopropyl peroxy dicarbonate **105-74-8**, Lauroyl peroxide 126-33-0, Tetramethylene sulfone **127-63-9**, Phenyl sulfone **620-32-6**, Benzyl sulfone **1561-49-5**, Dicyclohexylperoxy dicarbonate **1712-87-4**, m-Toluoyl peroxide **3006-82-4**, tert-Butylperoxy-2-ethyl hexanoate **14666-78-5 15520-11-3**, Bis(4-tert-butylcyclohexyl)peroxy dicarbonate **26748-41-4** 28452-93-9, Butadiene sulfone **32752-09-3**, Isobutyl peroxide **92177-99-6**, 3,3,5-Trimethylhexanoyl peroxide
(**electrolyte** for **lithium battery**)

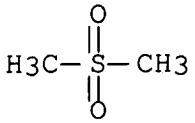
IT 79-10-7DP, Acrylic acid, reaction product with dipentaerythritol and ε-caprolactone and butylcarbonic acid 126-58-9DP, Dipentaerythritol, reaction product with ε-caprolactone and acrylic acid and butylcarbonic acid 502-44-3DP, ε-Caprolactone, reaction product with dipentaerythritol and acrylic acid and butylcarbonic acid 10411-26-4DP, MonoButylcarbonate, reaction product with dipentaerythritol and ε-caprolactone and acrylic acid
(**electrolyte** for **lithium battery**)

L50 ANSWER 4 OF 6 HCA COPYRIGHT 2007 ACS on STN
140:149224 **Nonaqueous electrolytic** solution with improved safety for **lithium battery.** Kim, Jun-ho; Lee, Ha-young; Choy, Sang-hoon; Kim, Ho-sung (Samsung SDI Co., Ltd., S. Korea). U.S. Pat. Appl. Publ. US 2004029018 A1 20040212, 12 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-637554 20030811. PRIORITY: KR 2002-47510 20020812.

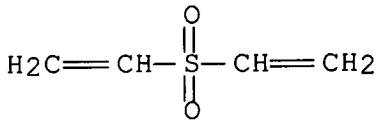
AB A **nonaq. electrolytic** soln. and a **lithium battery** employing the same include a **lithium** salt, an **org. solvent**, and a halogenated benzene compd. The use of the **nonaq. electrolytic** soln. causes formation of a polymer by oxidative decompn. of the **electrolytic** soln. even if a sharp voltage increase occurs due to overcharging of the **battery**, leading to consumption of an overcharge current, thus protecting the **battery.**

IT **67-71-0**, Methyl sulfone **77-77-0**, Vinyl sulfone **94-36-0**, Benzoylperoxide, uses **105-64-6**, Diisopropyl peroxy dicarbonate **105-74-8**, Lauroyl peroxide **127-63-9**, Phenyl sulfone **620-32-6**, Benzyl sulfone **1561-49-5**, Dicyclohexyl peroxy dicarbonate **1712-87-4** , m-Toluoyl peroxide **3006-82-4**, tert-Butylperoxy-2-ethylhexanoate **14666-78-5 15520-11-3**, Bis(4-tert-butylcyclohexyl) peroxydicarbonate **21324-40-3**, **Lithium** hexafluorophosphate **32752-09-3**, Isobutyl peroxide **92177-99-6**, 3,3,5-Trimethylhexanoylperoxide **651294-25-6**
(**nonaq. electrolytic** soln. with improved safety for **lithium battery**)

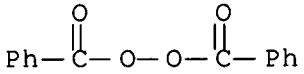
RN 67-71-0 HCA
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



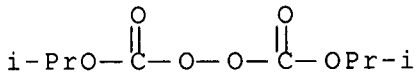
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



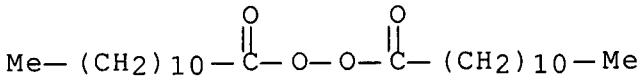
RN 94-36-0 HCA
CN Peroxide, dibenzoyl (CA INDEX NAME)



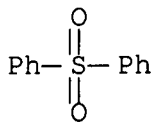
RN 105-64-6 HCA
CN Peroxydicarbonic acid, C,C'-bis(1-methylethyl) ester (CA INDEX NAME)



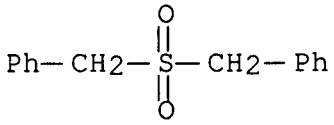
RN 105-74-8 HCA
CN Peroxide, bis(1-oxododecyl) (CA INDEX NAME)



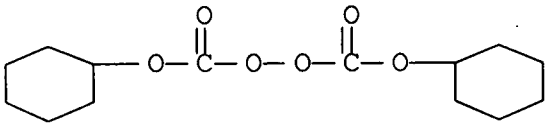
RN 127-63-9 HCA
CN Benzene, 1,1'-sulfonylbis- (CA INDEX NAME)



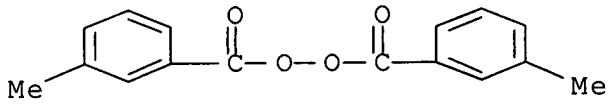
RN 620-32-6 HCA
CN Benzene, 1,1'-[sulfonylbis(methylene)]bis- (CA INDEX NAME)



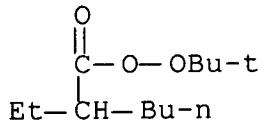
RN 1561-49-5 HCA
CN Peroxydicarbonic acid, C,C'-dicyclohexyl ester (CA INDEX NAME)



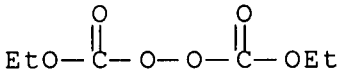
RN 1712-87-4 HCA
CN Peroxide, bis(3-methylbenzoyl) (9CI) (CA INDEX NAME)



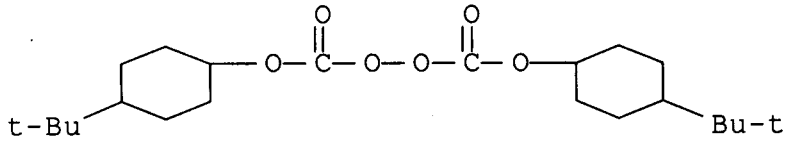
RN 3006-82-4 HCA
CN Hexaneperoxoic acid, 2-ethyl-, 1,1-dimethylethyl ester (CA INDEX NAME)



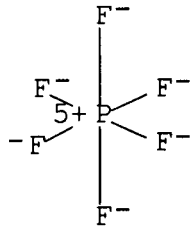
RN 14666-78-5 HCA
CN Peroxydicarbonic acid, diethyl ester (CA INDEX NAME)

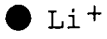


RN 15520-11-3 HCA
CN Peroxydicarbonic acid, C,C'-bis[4-(1,1-dimethylethyl)cyclohexyl] ester (CA INDEX NAME)

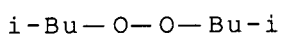


RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

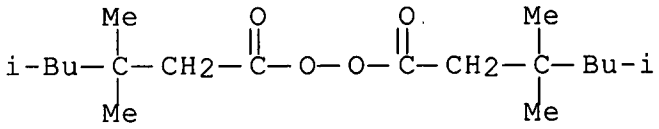




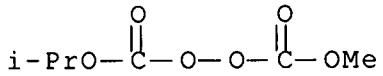
RN 32752-09-3 HCA
CN Peroxide, bis(2-methylpropyl) (CA INDEX NAME)



RN 92177-99-6 HCA
CN Peroxide, bis(3,3,5-trimethyl-1-oxohexyl) (9CI) (CA INDEX NAME)



RN 651294-25-6 HCA
CN Peroxydicarbonic acid, methyl 1-methylethyl ester (9CI) (CA INDEX NAME)



IC ICM H01M010-40
INCL 429326000; 429200000; 429340000; 429331000; 429332000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium battery nonaq electrolyte** soln improved safety
IT Esters, uses
Ethers, uses
Hydrocarbons, uses
(C1-20; **nonaq. electrolytic** soln. with improved safety for **lithium battery**)
IT Aromatic hydrocarbons, uses
(C5-20; **nonaq. electrolytic** soln. with improved safety for **lithium battery**)
IT Secondary **batteries**
(**lithium**; **nonaq. electrolytic** soln. with improved safety for **lithium battery**)
IT **Battery electrolytes**
(**nonaq. electrolytic** soln. with improved safety for **lithium battery**)
IT Polyesters, uses

(**nonaq. electrolytic** soln. with improved safety for **lithium battery**)

IT Alcohols, uses
(polyhydric; **nonaq. electrolytic** soln. with improved safety for **lithium battery**)

IT 3087-37-4, Tetrapropyltitanate
(**nonaq. electrolytic** soln. with improved safety for **lithium battery**)

IT 502-44-3, ε-Caprolactone 7439-93-2D, **Lithium**, salt 12190-79-3, Cobalt **lithium** oxide colio2
(**nonaq. electrolytic** soln. with improved safety for **lithium battery**)

IT 126-58-9DP, Dipentaerythritol, deriv.
(**nonaq. electrolytic** soln. with improved safety for **lithium battery**)

IT 56-81-5, Glycerol, uses **67-71-0**, Methyl sulfone 71-43-2D, Benzene, halogenated **77-77-0**, Vinyl sulfone **94-36-0**, Benzoylperoxide, uses 96-49-1, Ethylene carbonate **105-64-6**, Diisopropyl peroxy dicarbonate **105-74-8**, Lauroyl peroxide 108-32-7, Propylene carbonate 115-77-5, Pentaerythritol, uses 126-33-0, Tetramethylene sulfone 126-58-9, DiPentaerythritol **127-63-9**, Phenyl sulfone 456-55-3, Trifluoromethyl phenyl ether 462-06-6, Fluorobenzene **620-32-6**, Benzyl sulfone 623-53-0, Ethyl methyl carbonate **1561-49-5**, Dicyclohexyl peroxy dicarbonate **1712-87-4**, m-Toluoyl peroxide 2972-19-2 **3006-82-4**, tert-Butylperoxy-2-ethylhexanoate 9002-88-4, Polyethylene 9003-07-0, Polypropylene **14666-78-5 15520-11-3**, Bis(4-tert-butylcyclohexyl) peroxydicarbonate 21151-56-4, Benzene, 1-chloro-4-(chloromethoxy)- **21324-40-3**, **Lithium** hexafluorophosphate 28452-93-9, Butadiene sulfone **32752-09-3**, Isobutyl peroxide **92177-99-6**, 3,3,5-Trimethylhexanoylperoxide 130038-50-5, 2-Propenoic acid, 2-methyl-, ion(1-) homopolymer, uses **651294-25-6** 651294-26-7 651294-27-8
(**nonaq. electrolytic** soln. with improved safety for **lithium battery**)

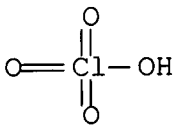
L50 ANSWER 5 OF 6 HCA COPYRIGHT 2007 ACS on STN
139:294681 **Electrolyte** for **lithium battery**

to reduce overcharge and improve electrochemical characteristics.
Kim, Jun-Ho; Lee, Ha-Young; Choy, Sang-Hoon; Kim, Ho-Sung; Noh, Hyeong-Gon (Samsung SDI Co., Ltd., S. Korea). U.S. Pat. Appl. Publ. US 2003190529 A1 20031009, 19 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-393294 20030321. PRIORITY: KR 2002-18264 20020403.

AB An **electrolyte** for a **lithium battery** includes a **nonaq. org. solvent**, a **lithium** salt, and an additive comprising (a) a compd. represented by the formula [(R1)nC6H(6-n+m)(X)m], and (b) a compd. selected from the group consisting of a sulfone-based compd., a poly(ester)(meth)acrylate, a polymer of poly(ester)(meth)acrylate, and a mixt. thereof: wherein R1 is a C1-10 alkyl, a C 1-10 alkoxy, or a C6-10 aryl, and preferably a Me, Et, or methoxy, X is a halogen, and m and n are integers ranging from 1 to 5, where m+n is less than or equal to 6.

IT **7791-03-9**, **Lithium** perchlorate **10377-51-2**
, **Lithium** iodide (LiI) **14283-07-9**,
Lithium tetrafluoroborate **18424-17-4**,
Lithium hexafluoroantimonate **21324-40-3**,
Lithium hexafluorophosphate **29935-35-1**,
Lithium hexafluoroarsenate **33454-82-9**,
Lithium triflate **90076-65-6 131651-65-5**,
Lithium perfluorobutanesulfonate
(**electrolyte** for **lithium battery** to reduce overcharge and improve electrochem. characteristics)

RN 7791-03-9 HCA
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)

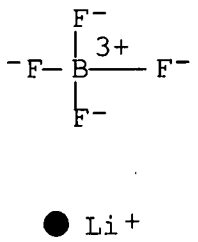


● Li

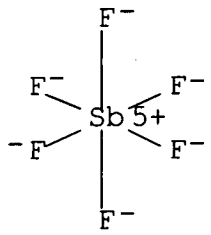
RN 10377-51-2 HCA
CN Lithium iodide (LiI) (CA INDEX NAME)

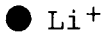
I—Li

RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)

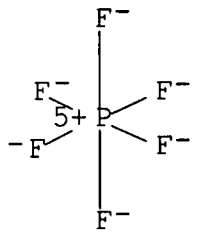


RN 18424-17-4 HCA
CN Antimonate(1-), hexafluoro-, lithium (1:1), (OC-6-11)- (CA INDEX NAME)

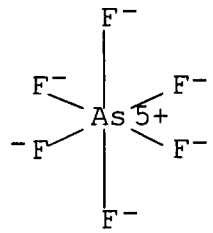




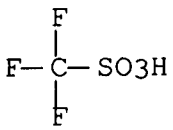
RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



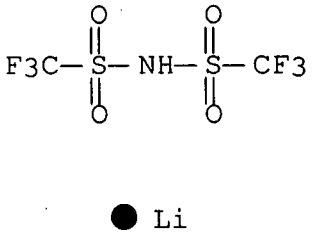
RN 29935-35-1 HCA
CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



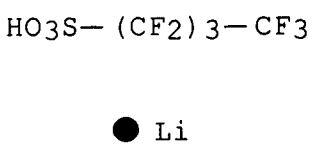
RN 33454-82-9 HCA
CN Methanesulfonic acid, 1,1,1-trifluoro-, lithium salt (1:1) (CA INDEX NAME)



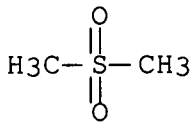
RN 90076-65-6 HCA
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:1) (CA INDEX NAME)



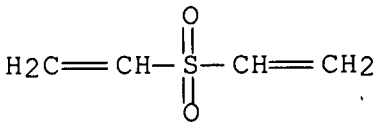
RN 131651-65-5 HCA
CN 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt (1:1) (CA INDEX NAME)



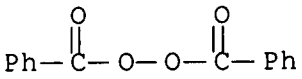
IT **67-71-0**, Methyl sulfone **77-77-0**, Vinyl sulfone **94-36-0**, Benzoyl peroxide, uses **105-64-6**, Diisopropyl peroxy dicarbonate **105-74-8**, Lauroyl peroxide **127-63-9**, Phenyl sulfone **620-32-6**, Benzyl sulfone **1561-49-5**, Dicyclohexyl peroxy dicarbonate **1712-87-4**, m-Toluoyl peroxide **3006-82-4**, tert-Butylperoxy-2-ethyl-hexanoate **14666-78-5** **15520-11-3**, Bis(4-tert-butylcyclohexyl)peroxy dicarbonate **32752-09-3**, Isobutyl peroxide **92177-99-6**, 3,3,5-Trimethylhexanoyl peroxide **609365-67-5**
(**electrolyte** for **lithium battery** to reduce overcharge and improve electrochem. characteristics)
RN 67-71-0 HCA
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



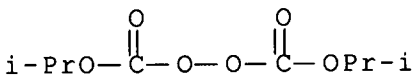
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



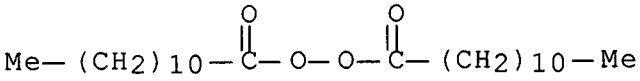
RN 94-36-0 HCA
CN Peroxide, dibenzoyl (CA INDEX NAME)



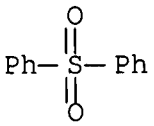
RN 105-64-6 HCA
CN Peroxydicarbonic acid, C,C'-bis(1-methylethyl) ester (CA INDEX NAME)



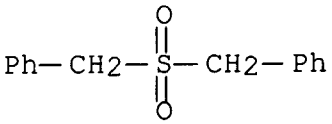
RN 105-74-8 HCA
CN Peroxide, bis(1-oxododecyl) (CA INDEX NAME)



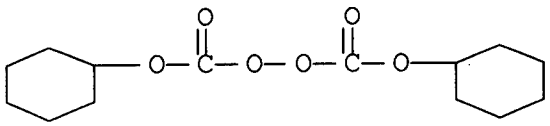
RN 127-63-9 HCA
CN Benzene, 1,1'-sulfonylbis- (CA INDEX NAME)



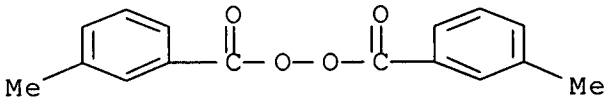
RN 620-32-6 HCA
CN Benzene, 1,1'-[sulfonylbis(methylene)]bis- (CA INDEX NAME)



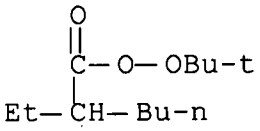
RN 1561-49-5 HCA
CN Peroxydicarbonic acid, C,C'-dicyclohexyl ester (CA INDEX NAME)



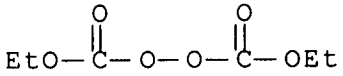
RN 1712-87-4 HCA
CN Peroxide, bis(3-methylbenzoyl) (9CI) (CA INDEX NAME)



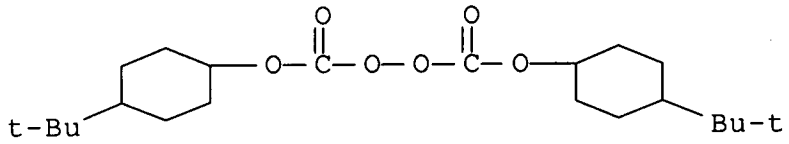
RN 3006-82-4 HCA
CN Hexaneperoxoic acid, 2-ethyl-, 1,1-dimethylethyl ester (CA INDEX NAME)



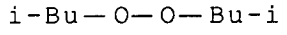
RN 14666-78-5 HCA
CN Peroxydicarbonic acid, diethyl ester (CA INDEX NAME)



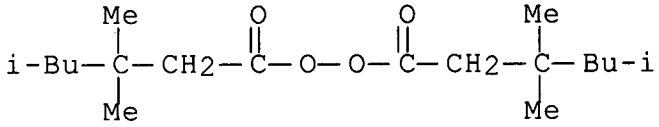
RN 15520-11-3 HCA
CN Peroxydicarbonic acid, C,C'-bis[4-(1,1-dimethylethyl)cyclohexyl] ester (CA INDEX NAME)



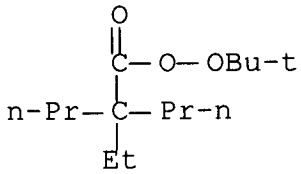
RN 32752-09-3 HCA
CN Peroxide, bis(2-methylpropyl) (CA INDEX NAME)



RN 92177-99-6 HCA
CN Peroxide, bis(3,3,5-trimethyl-1-oxohexyl) (9CI) (CA INDEX NAME)



RN 609365-67-5 HCA
CN Pentaneperoxoic acid, 2-ethyl-2-propyl-, 1,1-dimethylethyl ester (9CI) (CA INDEX NAME)



IC ICM H01M006-18
INCL 429307000; 429309000; 429326000; 429322000; 429323000; 429330000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium battery electrolyte** overcharge lowering
IT **Battery electrolytes**
(**electrolyte** for **lithium battery** to reduce overcharge and improve electrochem. characteristics)
IT Secondary **batteries**
(**lithium**; **electrolyte** for **lithium battery** to reduce overcharge and improve electrochem. characteristics)
IT Peroxides, uses

(org.; **electrolyte** for **lithium**
battery to reduce overcharge and improve electrochem.
characteristics)

IT Alcohols, uses
(trihydric; **electrolyte** for **lithium**
battery to reduce overcharge and improve electrochem.
characteristics)

IT 3087-37-4, Tetrapropyltitanate
(**electrolyte** for **lithium battery** to
reduce overcharge and improve electrochem. characteristics)

IT 71-43-2, Benzene, uses 96-49-1, Ethylene carbonate 105-58-8,
Diethyl carbonate 108-32-7, Propylene carbonate 108-88-3,
Toluene, uses 462-06-6, Fluorobenzene 616-38-6, Dimethyl
carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl
carbonate 1330-20-7, Xylene, uses 4437-85-8, Butylene carbonate
7447-41-8, **Lithium** chloride (LiCl), uses **7791-03-9**
, **Lithium** perchlorate **10377-51-2**,
Lithium iodide (LiI) 12355-58-7, **Lithium**
aluminate (Li5AlO4) **14283-07-9**, **Lithium**
tetrafluoroborate **18424-17-4**, **Lithium**
hexafluoroantimonate **21324-40-3**, **Lithium**
hexafluorophosphate 27359-10-0, Trifluorotoluene
29935-35-1, **Lithium** hexafluoroarsenate
33454-82-9, **Lithium** triflate 35363-40-7, Ethyl
propyl carbonate, uses 56525-42-9, Methyl propyl carbonate, uses
90076-65-6 131651-65-5, **Lithium**
perfluorobutanesulfonate
(**electrolyte** for **lithium battery** to
reduce overcharge and improve electrochem. characteristics)

IT 126-58-9DP, Dipentaerythritol, reaction product with
ε-caprolactone 502-44-3DP, ε-Caprolactone,
reaction product with dipentaerythritol 609772-45-4P
(**electrolyte** for **lithium battery** to
reduce overcharge and improve electrochem. characteristics)

IT 56-81-5, Glycerol, uses **67-71-0**, Methyl sulfone
77-77-0, Vinyl sulfone 79-10-7D, Acrylic acid,
ω-fatty acid esters C2-C21 79-41-4D, Methacrylic acid,
ω-fatty acid esters C2-C21 **94-36-0**, Benzoyl
peroxide, uses 104-92-7, 4-Bromoanisole **105-64-6**,
Diisopropyl peroxy dicarbonate **105-74-8**, Lauroyl peroxide

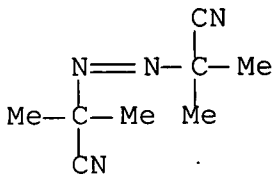
126-33-0, Tetramethylene sulfone **127-63-9**, Phenyl sulfone
149-32-6, Erythritol 452-10-8, 2,4-Difluoroanisole 456-49-5,
3-Fluoroanisole 459-60-9, 4-Fluoroanisole **620-32-6**,
Benzyl sulfone 623-12-1, 4-Chloroanisole **1561-49-5**,
Dicyclohexyl peroxy dicarbonate **1712-87-4**, m-Toluoyl
peroxide 2398-37-0, 3-Bromoanisole 2845-89-8, 3-Chloroanisole
3006-82-4, tert-Butylperoxy-2-ethyl-hexanoate
14666-78-5 15520-11-3, Bis(4-tert-
butylcyclohexyl)peroxy dicarbonate 28452-93-9, Butadiene sulfone
32752-09-3, Isobutyl peroxide **92177-99-6**,
3,3,5-Trimethylhexanoyl peroxide 93343-10-3, 3,5-Difluoroanisole
202925-08-4, 3-Chloro-5-fluoroanisole **609365-67-5**
(**electrolyte** for **lithium battery** to
reduce overcharge and improve electrochem. characteristics)

L50 ANSWER 6 OF 6 HCA COPYRIGHT 2007 ACS on STN
126:114265 Toxicity assessment of the samples from water environment using cultured mammalian cells. Kunimoto, Manabu; Yasuhara, Akio; Soma, Yuko; Nakasugi, Osami (Environmental Health Sciences Division, National Institute Environmental Studies, Tsukuba, 305, Japan). Mizu Kankyo Gakkaishi, 19(11), 855-860 (English) 1996. CODEN: MKGAEY. ISSN: 0916-8958. Publisher: Nippon Mizu Kankyo Gakkai.

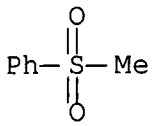
AB To evaluate the toxicity other than mutagenicity or carcinogenicity present in the water environment, in vitro cytotoxicity tests using cultured mammalian cells were utilized. Cytotoxicity was estd. based on the changes in viable **cell** nos. of **primary** rat cerebellar **cells**, rat pheochromocytoma cell PC 12h, and normal rat kidney epithelial cell NRK-52E. Evaluation of these in vitro systems was performed by testing ref. chems. proposed by MEIC (Multicenter Evaluation of In Vitro Cytotoxicity), an international program for the validation of in vitro cytotoxicity tests. When cells in culture were exposed to landfill leachate for 48 h, viable cell nos. decreased dose dependently. However, fractions prepd. by condensation and extn. from the leachates showed much less effects on the viable cell nos. Their individual cytotoxicity did not account for that of unfractionated leachate, suggesting that component(s) with higher cytotoxicity may not be successfully recovered during the condensation and extn. process. Among the silica-gel column fractions of acetone-exts. of sediment samples, fractions eluted with acetone showed the highest cytotoxicity. These results indicate that the cytotoxicity of water samples like landfill leachates or of their exts. can be detected with the present assay system but toxic components may not be recovered quant. during the condensation and extn. process.

IT **78-67-1**, α,α'-Azobis(isobutyronitrile)

3112-85-4, Methyl phenyl sulfone
(toxicity assessment of the samples from water environment using cultured mammalian cells)
RN 78-67-1 HCA
CN Propanenitrile, 2,2'-(1,2-diazenediyl)bis[2-methyl- (CA INDEX NAME)



RN 3112-85-4 HCA
CN Benzene, (methylsulfonyl)- (CA INDEX NAME)



CC 4-1 (Toxicology)
Section cross-reference(s): 61
IT 50-06-6, Phenobarbital, biological studies 50-48-6, Amitriptyline 50-54-4, Quinidine sulfate 50-63-5, Chloroquine phosphate 50-78-2, Acetyl salicylic acid 54-11-5, Nicotine 54-85-3, Isoniazid 55-48-1, Atropine sulfate 56-23-5, biological studies 56-75-7, Chloramphenicol 57-41-0, Phenytoin 58-08-2, Caffeine, biological studies 58-55-9, Theophylline, biological studies 58-89-9, Lindane 60-13-9, Amphetamine sulfate 62-76-0, Sodium oxalate 64-17-5, Ethanol, biological studies 67-56-1, Methanol, biological studies 67-63-0, Isopropyl alcohol, biological studies 67-66-3, Chloroform, biological studies 70-30-4, Hexachlorophene 71-55-6, 1,1,1-Trichloroethane 75-09-2, Dichloromethane, biological studies **78-67-1**, α,α'-Azobis(isobutyronitrile) 81-81-2, Warfarin 84-74-2, Dibutyl phthalate 87-86-5, Pentachlorophenol 94-75-7, biological studies

103-90-2 106-46-7, 1,4-Dichlorobenzene 107-21-1, 1,2-Ethanediol, biological studies 108-95-2, Phenol, biological studies 110-67-8, 3-Methoxypropanenitrile 110-88-3, Trioxane, biological studies 111-76-2, 2-Butoxyethanol 112-49-2, Triethylene glycol dimethyl ether 115-96-8, Tris(2-chloroethyl)phosphate 121-75-5 123-91-1, 1,4-Dioxane, biological studies 127-19-5 130-61-0, Thioridazine hydrochloride 151-50-8, Potassium cyanide 152-11-4, Verapamil hydrochloride 318-98-9, Propranolol hydrochloride 341-69-5, Orphenadrine hydrochloride 439-14-5, Diazepam 469-62-5, Dextropropoxyphene 615-58-7, 2,4-Dibromophenol 632-22-4, Tetramethylurea 1327-53-3, Arsenic trioxide 1330-20-7, Xylene, biological studies **3112-85-4**, Methyl phenyl sulfone 4320-85-8 4685-14-7, Paraquat 6970-56-5 7326-46-7, Tetrahydro-2-methyl-2-furanol 7446-18-6, Thallium sulfate 7447-40-7, Potassium chloride, biological studies 7487-94-7, Mercuric chloride, biological studies 7647-14-5, Sodium chloride (NaCl), biological studies 7681-49-4, Sodium fluoride, biological studies 7720-78-7, Ferrous sulfate 7758-98-7, Cupric sulfate, biological studies 10022-31-8, Barium nitrate 10377-48-7, **Lithium** sulfate 13423-22-8 20830-75-5, Digoxin 37306-44-8, Triazole 53778-61-3 54063-15-9 74498-88-7, 1-Methoxy-2-(methoxymethoxy)ethane
(toxicity assessment of the samples from water environment using cultured mammalian cells)

=>

(111) 2nd Search

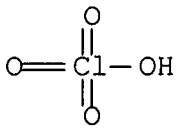
=> D L56 1-4 CBIB ABS HITSTR HITIND

L56 ANSWER 1 OF 4 HCA COPYRIGHT 2007 ACS on STN
145:457647 Polymer **electrolyte** for a **lithium** secondary **battery.** Lee, Yong-Beom; Cheong, Kwang-Jo; Song, Eui-Hwan (Samsung Sdi Co., Ltd., S. Korea). Eur. Pat. Appl. EP 1715542 A1 20061025, 22pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, BA, HR, IS, YU. (English). CODEN: EPXXDW. APPLICATION: EP 2006-112896 20060421. PRIORITY: KR 2005-33084 20050421.

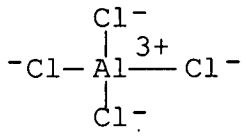
AB The invention relates to a polymer **electrolyte** for a **lithium** secondary **battery.** The polymer **electrolyte** comprises: a **non-aq. org. solvent**; a **lithium** salt; and a polymer being obtained by polymn. of at least one monomer represented by: A-**polyester polyol**-B, wherein the **polyester polyol** is being obtained by condensation of at least one alc. having from 2 to 6 OH groups and at least one dicarboxylic acid, the **polyester polyol** having a wt. av. mol. wt. ranging from about 100 to about 10,000,000, and each of A and B are linked to terminal OH groups of the **polyester polyol**, each of A and B being selected from the group consisting of CH2=CR-C(=O)-, CH2=CR-O-CH2-, CH2=CR-, CH2=CR-O-C(=O)-, CH2=CH-CH2-O-, CH2=CH-S(=O)2-, and CH2=CR-C(=O)-O-CH2CH2-NH-C(=O)-, wherein R is selected from the group consisting of C1 to C10 hydrocarbons and C6 to C10 arom. hydrocarbons.

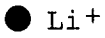
IT **7791-03-9**, **Lithium** perchlorate **14024-11-4**
, **Lithium** tetrachloroaluminate **14283-07-9**,
Lithium tetrafluoroborate **18424-17-4**,
Lithium hexafluoroantimonate **21324-40-3**,
Lithium hexafluorophosphate **29935-35-1**,
Lithium hexafluoroarsenate **33454-82-9**,
Lithium triflate **90076-65-6**
(polymer **electrolyte** for **lithium** secondary **battery**)

RN 7791-03-9 HCA
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)

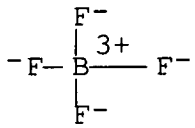


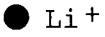
RN 14024-11-4 HCA
CN Aluminate(1-), tetrachloro-, lithium (1:1), (T-4)- (CA INDEX NAME)



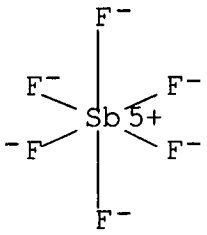


RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



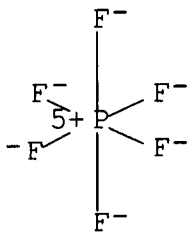


RN 18424-17-4 HCA
CN Antimonate(1-), hexafluoro-, lithium (1:1), (OC-6-11)- (CA INDEX NAME)



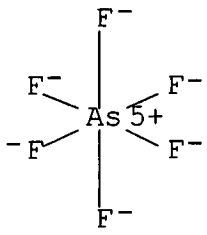
● Li⁺

RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



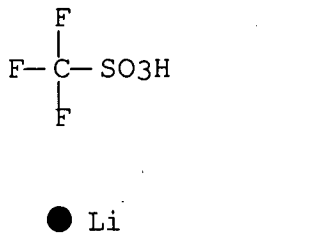
● Li⁺

RN 29935-35-1 HCA
CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

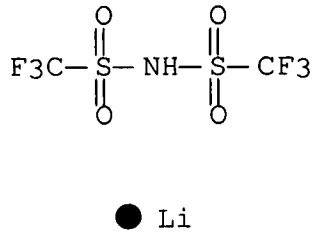


● Li⁺

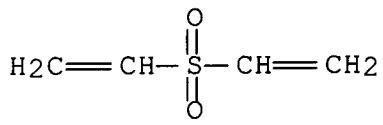
RN 33454-82-9 HCA
CN Methanesulfonic acid, 1,1,1-trifluoro-, lithium salt (1:1) (CA INDEX NAME)



RN 90076-65-6 HCA
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:1) (CA INDEX NAME)



IT 77-77-0, Divinylsulfone
(polymer **electrolyte** for **lithium** secondary **battery**)
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST polymer **electrolyte lithium** secondary **battery**
IT Intercalation compounds
(**lithiated**; polymer **electrolyte** for **lithium** secondary **battery**)
IT Secondary **batteries**
(**lithium**; polymer **electrolyte** for **lithium** secondary **battery**)
IT **Battery electrolytes**
Shear strength
(polymer **electrolyte** for **lithium** secondary **battery**)
IT Aromatic hydrocarbons, uses
Carbonaceous materials (technological products)
Esters, uses
Ethers, uses
Ketones, uses
Nitriles, uses
(polymer **electrolyte** for **lithium** secondary **battery**)
IT 51938-28-4
(polymer **electrolyte** for **lithium** secondary **battery**)
IT 71-43-2, Benzene, uses 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 108-88-3, Toluene, uses 462-06-6, Fluorobenzene 463-79-6D, Carbonic acid, ester 623-53-0, Ethyl methyl carbonate 1330-20-7, Xylene, uses **7791-03-9**, **Lithium** perchlorate **14024-11-4**, **Lithium** tetrachloroaluminate **14283-07-9**, **Lithium** tetrafluoroborate **18424-17-4**, **Lithium** hexafluoroantimonate **21324-40-3**, **Lithium** hexafluorophosphate 25496-08-6, Fluorotoluene 27359-10-0, Trifluorotoluene **29935-35-1**, **Lithium** hexafluoroarsenate **33454-82-9**, **Lithium** triflate 37220-89-6, Aluminum **lithium** oxide **90076-65-6** 132843-44-8 244761-29-3, **Lithium** bisoxalatoborate

913531-20-1 913531-22-3 913531-23-4 913531-24-5
(polymer **electrolyte** for **lithium** secondary **battery**)

IT **77-77-0**, Divinylsulfone 872-36-6, Vinylene carbonate 3741-38-6, Ethylene sulfite 114435-02-8, Fluoroethylene carbonate 827300-14-1 827300-17-4
(polymer **electrolyte** for **lithium** secondary **battery**)

IT 9010-89-3P, Adipic acid-diethylene glycol copolymer 85214-48-8DP, Adipic acid-diethylene glycol-ethylene glycol-trimethylolpropane copolymer, reaction product with isocyanoethyl methacrylate 85214-48-8P, Adipic acid-diethylene glycol-ethylene glycol-trimethylolpropane copolymer
(polymer **electrolyte** for **lithium** secondary **battery**)

L56 ANSWER 2 OF 4 HCA COPYRIGHT 2007 ACS on STN

140:238483 **Electrolyte** for a **lithium battery**

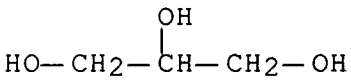
. Park, Yong-Chul; Jung, Won-Ii; Kim, Geun-Bae; Cho, Jae-Phil; Jung, Cheol-Soo (S. Korea). U.S. Pat. Appl. Publ. US 2004048163 A1 20040311, 13 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-656086 20030905. PRIORITY: KR 2002-53879 20020906.

AB An **electrolyte** for a **lithium battery** includes a **nonaq. org. solvent**, a **lithium** salt, and an additive comprising (a) a sulfone-based compd. and (b) a C3-30 org. peroxide or azo-based compd. The **electrolyte** may further include a **poly(ester)**(meth)acrylate or a polymer that is derived from a (**polyester)polyol** with at least three hydroxyl (-OH) groups, where a portion or all of the hydroxyl groups are substituted with a (meth)acrylic ester and the remaining hydroxyl groups that are not substituted with the (meth)acrylic ester are substituted with a group having no radical reactivity. The **lithium battery** comprising the **electrolyte** of the present invention has a significantly improved charge-discharge and cycle life characteristics, recovery capacity ratio at high temp., and swelling inhibition properties.

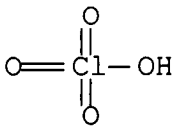
IT **56-81-5**, Glycerol, uses **7791-03-9**, **Lithium** perchlorate **10377-51-2**, **Lithium** iodide (LiI) **14024-11-4**, **Lithium** tetrachloroaluminate **14283-07-9**, **Lithium** tetrafluoroborate **18424-17-4**, **Lithium** hexafluoroantimonate **21324-40-3**, **Lithium** hexafluorophosphate **29935-35-1**, **Lithium** hexafluoroarsenate **33454-82-9**, **Lithium** triflate **39300-70-4**,

Lithium nickel oxide **90076-65-6**
131651-65-5, **Lithium** nonafluorobutanesulfonate
162684-16-4, **Lithium** manganese nickel oxide
193215-00-8, Cobalt lithiummanganese nickel oxide
Co0.1LiMn0.2Ni0.7O2
(**electrolyte** for **lithium battery**)

RN 56-81-5 HCA
CN 1,2,3-Propanetriol (CA INDEX NAME)

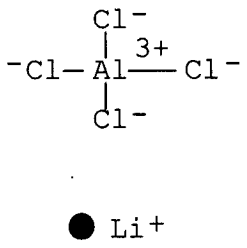


RN 7791-03-9 HCA
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)

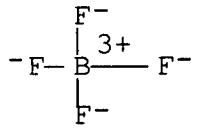


RN 10377-51-2 HCA
CN Lithium iodide (LiI) (CA INDEX NAME)

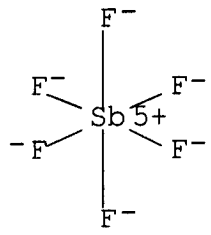
RN 14024-11-4 HCA
CN Aluminate(1-), tetrachloro-, lithium (1:1), (T-4)- (CA INDEX NAME)



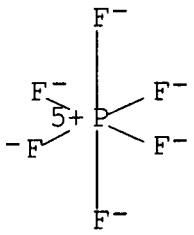
RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



RN 18424-17-4 HCA
CN Antimonate(1-), hexafluoro-, lithium (1:1), (OC-6-11)- (CA INDEX NAME)

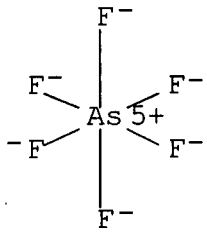


RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



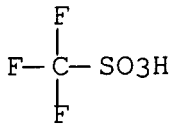
● Li+

RN 29935-35-1 HCA
CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)



● Li+

RN 33454-82-9 HCA
CN Methanesulfonic acid, 1,1,1-trifluoro-, lithium salt (1:1) (CA INDEX NAME)

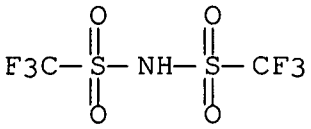


● Li

RN 39300-70-4 HCA
CN Lithium nickel oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Ni	x	7440-02-0
Li	x	7439-93-2

RN 90076-65-6 HCA
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:1) (CA INDEX NAME)



RN 131651-65-5 HCA
CN 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt (1:1) (CA INDEX NAME)

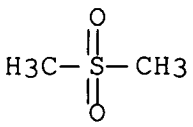
RN 162684-16-4 HCA
CN Lithium manganese nickel oxide (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Ni	x	7440-02-0
Mn	x	7439-96-5
Li	x	7439-93-2

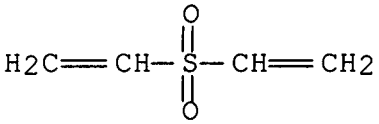
RN 193215-00-8 HCA
CN Cobalt lithium manganese nickel oxide (Co0.1LiMn0.2Ni0.7O2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	0.1	7440-48-4
Ni	0.7	7440-02-0
Mn	0.2	7439-96-5
Li	1	7439-93-2

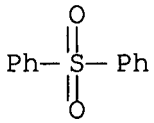
IT **67-71-0**, Methyl sulfone **77-77-0**, Vinyl sulfone **127-63-9**, Phenyl sulfone **620-32-6**, Benzyl sulfone (**electrolyte** for **lithium battery**)
RN 67-71-0 HCA
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



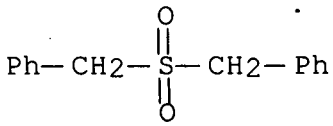
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



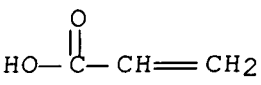
RN 127-63-9 HCA
CN Benzene, 1,1'-sulfonylbis- (CA INDEX NAME)



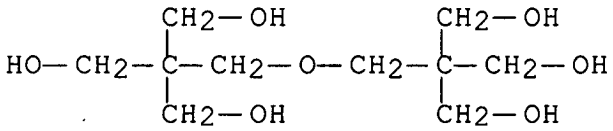
RN 620-32-6 HCA
CN Benzene, 1,1'-[sulfonylbis(methylene)]bis- (CA INDEX NAME)



IT **79-10-7DP**, Acrylic acid, reaction product with dipentaerythritol and ε-caprolactone and butylcarbonic acid
126-58-9DP, Dipentaerythritol, reaction product with ε-caprolactone and acrylic acid and butylcarbonic acid
(**electrolyte** for **lithium battery**)
RN 79-10-7 HCA
CN 2-Propenoic acid (CA INDEX NAME)



RN 126-58-9 HCA
CN 1,3-Propanediol, 2,2'-[oxybis(methylene)]bis[2-(hydroxymethyl)- (CA INDEX NAME)



IC ICM H01M010-40
INCL 429326000; 429329000; 429339000; 429340000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **lithium battery electrolyte**
IT **Battery electrolytes**
(electrolyte for **lithium battery)**
IT Aromatic hydrocarbons, uses
Carbonates, uses
Esters, uses
Ethers, uses
Ketones, uses
(electrolyte for **lithium battery)**
IT Azo compounds
(electrolyte for **lithium battery)**
IT Carbonaceous materials (technological products)
(electrolyte for **lithium battery)**
IT Sulfones
(electrolyte for **lithium battery)**
IT **Polyesters**, uses
(hydroxy-terminated; **electrolyte** for **lithium battery)**
IT Secondary **batteries**
(lithium; **electrolyte** for **lithium battery)**
IT **Polyesters**, uses
(methacrylate; **electrolyte** for **lithium**

battery)

IT Peroxides, uses
(org., C3-30; **electrolyte** for **lithium battery**)

IT Esters, uses
(poly-; **electrolyte** for **lithium battery**)

IT Imides
Sulfonic acids, uses
(sulfonimides, perfluoro derivs., **lithium** salts; **electrolyte** for **lithium battery**)

IT **56-81-5**, Glycerol, uses 71-43-2, Benzene, uses 96-49-1, Ethylene carbonate 98-95-3, Nitrobenzene, uses 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 108-88-3, Toluene, uses 108-90-7, Chlorobenzene, uses 149-32-6, Erythritol 462-06-6, Fluorobenzene 616-38-6, Dimethyl carbonate 623-53-0, Methylethyl carbonate 623-96-1, Dipropyl carbonate 1330-20-7, Xylene, uses 4437-85-8, Butylene carbonate 7790-99-0, Iodine chloride (ICl) **7791-03-9**, **Lithium** perchlorate **10377-51-2**, **Lithium** iodide (LiI) **14024-11-4**, **Lithium** tetrachloroaluminate **14283-07-9**, **Lithium** tetrafluoroborate **18424-17-4**, **Lithium** hexafluoroantimonate **21324-40-3**, **Lithium** hexafluorophosphate 27359-10-0, Trifluorotoluene **29935-35-1**, **Lithium** hexafluoroarsenate **33454-82-9**, **Lithium** triflate 35363-40-7, Ethyl propyl carbonate, uses **39300-70-4**, **Lithium** nickel oxide 56525-42-9, Methyl propyl carbonate, uses **90076-65-6** **131651-65-5**, **Lithium** nonafluorobutanesulfonate **162684-16-4**, **Lithium** manganese nickel oxide **193215-00-8**, Cobalt lithiummanganese nickel oxide Co0.1LiMn0.2Ni0.7O2
(**electrolyte** for **lithium battery**)

IT **67-71-0**, Methyl sulfone **77-77-0**, Vinyl sulfone 78-67-1, 2,2'-Azobisisobutyronitrile 94-36-0, Benzoyl peroxide, uses 105-64-6, Diisopropyl peroxy dicarbonate 105-74-8, Lauroyl peroxide 126-33-0, Tetramethylene sulfone **127-63-9**, Phenyl sulfone **620-32-6**, Benzyl sulfone 1561-49-5, Dicyclohexylperoxy dicarbonate 1712-87-4, m-Toluoyl peroxide 3006-82-4, tert-Butylperoxy-2-ethyl hexanoate 14666-78-5

15520-11-3, Bis(4-tert-butylcyclohexyl)peroxy dicarbonate
26748-41-4 28452-93-9, Butadiene sulfone 32752-09-3, Isobutyl
peroxide 92177-99-6, 3,3,5-Trimethylhexanoyl peroxide
(**electrolyte** for **lithium battery**)

IT **79-10-7DP**, Acrylic acid, reaction product with
dipentaerythritol and ε-caprolactone and butylcarbonic acid
126-58-9DP, Dipentaerythritol, reaction product with
ε-caprolactone and acrylic acid and butylcarbonic acid
502-44-3DP, ε-Caprolactone, reaction product with
dipentaerythritol and acrylic acid and butylcarbonic acid
10411-26-4DP, MonoButylcarbonate, reaction product with
dipentaerythritol and ε-caprolactone and acrylic acid
(**electrolyte** for **lithium battery**)

L56 ANSWER 3 OF 4 HCA COPYRIGHT 2007 ACS on STN

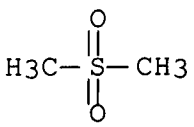
140:149224 **Nonaqueous electrolytic** solution with
improved safety for **lithium battery.** Kim,
Jun-ho; Lee, Ha-young; Choy, Sang-hoon; Kim, Ho-sung (Samsung SDI
Co., Ltd., S. Korea). U.S. Pat. Appl. Publ. US 2004029018 A1
20040212, 12 pp. (English). CODEN: USXXCO. APPLICATION: US
2003-637554 20030811. PRIORITY: KR 2002-47510 20020812.

AB A **nonaq. electrolytic** soln. and a **lithium battery** employing the same include a **lithium** salt, an **org. solvent**, and a halogenated benzene compd. The use of the **nonaq. electrolytic** soln. causes formation of a polymer by oxidative decompn. of the **electrolytic** soln. even if a sharp voltage increase occurs due to overcharging of the **battery**, leading to consumption of an overcharge current, thus protecting the **battery.**

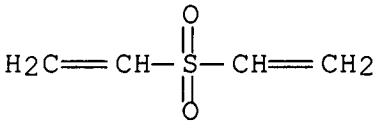
IT **67-71-0**, Methyl sulfone **77-77-0**, Vinyl sulfone
127-63-9, Phenyl sulfone **620-32-6**, Benzyl sulfone
21324-40-3, **Lithium** hexafluorophosphate
(**nonaq. electrolytic** soln. with improved
safety for **lithium battery**)

RN 67-71-0 HCA

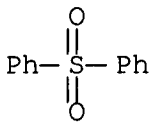
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



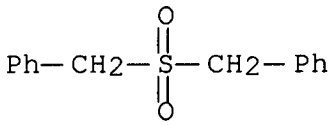
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



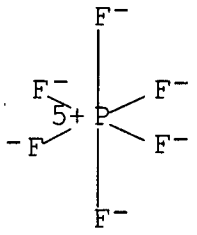
RN 127-63-9 HCA
CN Benzene, 1,1'-sulfonylbis- (CA INDEX NAME)

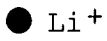


RN 620-32-6 HCA
CN Benzene, 1,1'-[sulfonylbis(methylene)]bis- (CA INDEX NAME)



RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)





IC ICM H01M010-40
INCL 429326000; 429200000; 429340000; 429331000; 429332000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium battery nonaq electrolyte** soln improved safety
IT Esters, uses
Ethers, uses
Hydrocarbons, uses
(C1-20; **nonaq. electrolytic** soln. with improved safety for **lithium battery**)
IT Aromatic hydrocarbons, uses
(C5-20; **nonaq. electrolytic** soln. with improved safety for **lithium battery**)
IT Secondary **batteries**
(**lithium**; **nonaq. electrolytic** soln. with improved safety for **lithium battery**)
IT **Battery electrolytes**
(**nonaq. electrolytic** soln. with improved safety for **lithium battery**)
IT **Polyesters**, uses
(**nonaq. electrolytic** soln. with improved safety for **lithium battery**)
IT Alcohols, uses
(**polyhydric**; **nonaq. electrolytic** soln. with improved safety for **lithium battery**)
IT 3087-37-4, Tetrapropyltitanate
(**nonaq. electrolytic** soln. with improved

safety for **lithium battery**)

IT 502-44-3, ε-Caprolactone 7439-93-2D, **Lithium**, salt 12190-79-3, Cobalt **lithium** oxide colio2
(**nonaq. electrolytic** soln. with improved safety for **lithium battery**)

IT 126-58-9DP, Dipentaerythritol, deriv.
(**nonaq. electrolytic** soln. with improved safety for **lithium battery**)

IT 56-81-5, Glycerol, uses **67-71-0**, Methyl sulfone 71-43-2D, Benzene, halogenated **77-77-0**, Vinyl sulfone 94-36-0, Benzoylperoxide, uses 96-49-1, Ethylene carbonate 105-64-6, Diisopropyl peroxy dicarbonate 105-74-8, Lauroyl peroxide 108-32-7, Propylene carbonate 115-77-5, Pentaerythritol, uses 126-33-0, Tetramethylene sulfone 126-58-9, DiPentaerythritol **127-63-9**, Phenyl sulfone 456-55-3, Trifluoromethyl phenyl ether 462-06-6, Fluorobenzene **620-32-6**, Benzyl sulfone 623-53-0, Ethyl methyl carbonate 1561-49-5, Dicyclohexyl peroxy dicarbonate 1712-87-4, m-Toluoyl peroxide 2972-19-2 3006-82-4, tert-Butylperoxy-2-ethylhexanoate 9002-88-4, Polyethylene 9003-07-0, Polypropylene 14666-78-5 15520-11-3, Bis(4-tert-butylcyclohexyl) peroxydicarbonate 21151-56-4, Benzene, 1-chloro-4-(chloromethoxy)- **21324-40-3**, **Lithium** hexafluorophosphate 28452-93-9, Butadiene sulfone 32752-09-3, Isobutyl peroxide 92177-99-6, 3,3,5-Trimethylhexanoylperoxide 130038-50-5, 2-Propenoic acid, 2-methyl-, ion(1-) homopolymer, uses 651294-25-6 651294-26-7 651294-27-8
(**nonaq. electrolytic** soln. with improved safety for **lithium battery**)

L56 ANSWER 4 OF 4 HCA COPYRIGHT 2007 ACS on STN

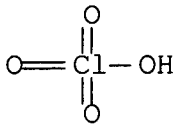
139:294681 **Electrolyte** for **lithium battery** to reduce overcharge and improve electrochemical characteristics.
Kim, Jun-Ho; Lee, Ha-Young; Choy, Sang-Hoon; Kim, Ho-Sung; Noh, Hyeong-Gon (Samsung SDI Co., Ltd., S. Korea). U.S. Pat. Appl. Publ. US 2003190529 A1 20031009, 19 pp. (English). CODEN: USXXCO. APPLICATION: US 2003-393294 20030321. PRIORITY: KR 2002-18264 20020403.

AB An **electrolyte** for a **lithium battery** includes a **nonaq. org. solvent**, a **lithium** salt, and an additive comprising (a) a compd. represented by the formula [(R1)nC6H(6-

n+m)(X)m], and (b) a compd. selected from the group consisting of a sulfone-based compd., a poly(ester)(meth)acrylate, a polymer of poly(ester)(meth)acrylate, and a mixt. thereof: wherein R1 is a C1-10 alkyl, a C 1-10 alkoxy, or a C6-10 aryl, and preferably a Me, Et, or methoxy, X is a halogen, and m and n are integers ranging from 1 to 5, where m+n is less than or equal to 6.

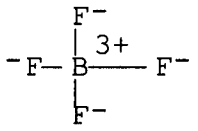
IT **7791-03-9**, **Lithium** perchlorate **10377-51-2**
, **Lithium** iodide (LiI) **14283-07-9**,
Lithium tetrafluoroborate **18424-17-4**,
Lithium hexafluoroantimonate **21324-40-3**,
Lithium hexafluorophosphate **29935-35-1**,
Lithium hexafluoroarsenate **33454-82-9**,
Lithium triflate **90076-65-6 131651-65-5**,
Lithium perfluorobutanesulfonate
(**electrolyte** for **lithium battery** to
reduce overcharge and improve electrochem. characteristics)

RN 7791-03-9 HCA
CN Perchloric acid, lithium salt (1:1) (CA INDEX NAME)

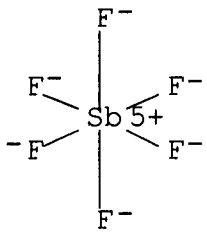


RN 10377-51-2 HCA
CN Lithium iodide (LiI) (CA INDEX NAME)

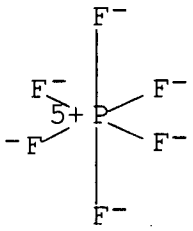
RN 14283-07-9 HCA
CN Borate(1-), tetrafluoro-, lithium (1:1) (CA INDEX NAME)



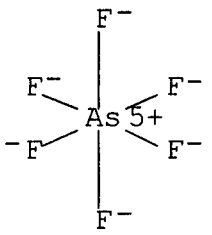
RN 18424-17-4 HCA
CN Antimonate(1-), hexafluoro-, lithium (1:1), (OC-6-11)- (CA INDEX NAME)

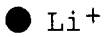


RN 21324-40-3 HCA
CN Phosphate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

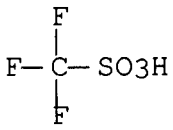


RN 29935-35-1 HCA
CN Arsenate(1-), hexafluoro-, lithium (1:1) (CA INDEX NAME)

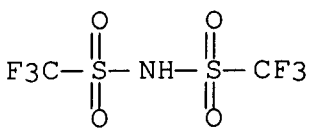




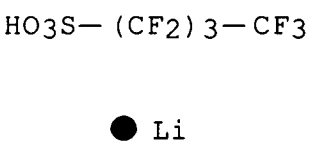
RN 33454-82-9 HCA
CN Methanesulfonic acid, 1,1,1-trifluoro-, lithium salt (1:1) (CA INDEX NAME)



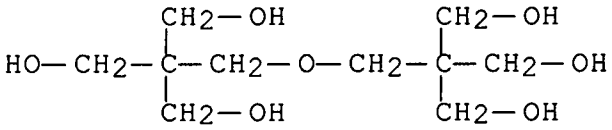
RN 90076-65-6 HCA
CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (1:1) (CA INDEX NAME)



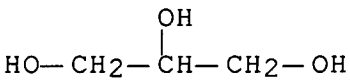
RN 131651-65-5 HCA
CN 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt (1:1) (CA INDEX NAME)



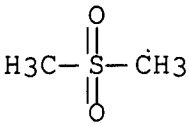
IT **126-58-9DP**, Dipentaerythritol, reaction product with ε-caprolactone
(**electrolyte** for **lithium battery** to reduce overcharge and improve electrochem. characteristics)
RN 126-58-9 HCA
CN 1,3-Propanediol, 2,2'-[oxybis(methylene)]bis[2-(hydroxymethyl)- (CA INDEX NAME)



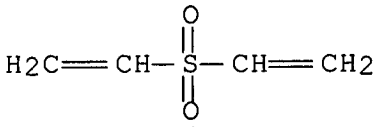
IT **56-81-5**, Glycerol, uses **67-71-0**, Methyl sulfone **77-77-0**, Vinyl sulfone **79-10-7D**, Acrylic acid, ω-fatty acid esters C2-C21 **79-41-4D**, Methacrylic acid, ω-fatty acid esters C2-C21 **127-63-9**, Phenyl sulfone **620-32-6**, Benzyl sulfone
(**electrolyte** for **lithium battery** to reduce overcharge and improve electrochem. characteristics)
RN 56-81-5 HCA
CN 1,2,3-Propanetriol (CA INDEX NAME)



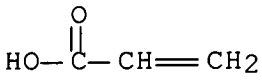
RN 67-71-0 HCA
CN Methane, 1,1'-sulfonylbis- (CA INDEX NAME)



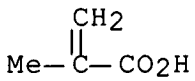
RN 77-77-0 HCA
CN Ethene, 1,1'-sulfonylbis- (CA INDEX NAME)



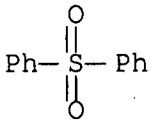
RN 79-10-7 HCA
CN 2-Propenoic acid (CA INDEX NAME)



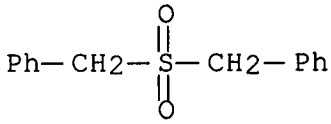
RN 79-41-4 HCA
CN 2-Propenoic acid, 2-methyl- (CA INDEX NAME)



RN 127-63-9 HCA
CN Benzene, 1,1'-sulfonylbis- (CA INDEX NAME)



RN 620-32-6 HCA
CN Benzene, 1,1'-[sulfonylbis(methylene)]bis- (CA INDEX NAME)



IC ICM H01M006-18
INCL 429307000; 429309000; 429326000; 429322000; 429323000; 429330000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium battery electrolyte** overcharge lowering
IT **Battery electrolytes**
(**electrolyte** for **lithium battery** to reduce overcharge and improve electrochem. characteristics)
IT Secondary **batteries**
(**lithium**; **electrolyte** for **lithium battery** to reduce overcharge and improve electrochem. characteristics)
IT Peroxides, uses

(org.; **electrolyte** for **lithium**
battery to reduce overcharge and improve electrochem.
characteristics)

IT Alcohols, uses
(trihydric; **electrolyte** for **lithium**
battery to reduce overcharge and improve electrochem.
characteristics)

IT 3087-37-4, Tetrapropyltitanate
(**electrolyte** for **lithium battery** to
reduce overcharge and improve electrochem. characteristics)

IT 71-43-2, Benzene, uses 96-49-1, Ethylene carbonate 105-58-8,
Diethyl carbonate 108-32-7, Propylene carbonate 108-88-3,
Toluene, uses 462-06-6, Fluorobenzene 616-38-6, Dimethyl
carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl
carbonate 1330-20-7, Xylene, uses 4437-85-8, Butylene carbonate
7447-41-8, **Lithium** chloride (LiCl), uses **7791-03-9**
, **Lithium** perchlorate **10377-51-2**,
Lithium iodide (LiI) 12355-58-7, **Lithium**
aluminate (Li5AlO4) **14283-07-9**, **Lithium**
tetrafluoroborate **18424-17-4**, **Lithium**
hexafluoroantimonate **21324-40-3**, **Lithium**
hexafluorophosphate 27359-10-0, Trifluorotoluene
29935-35-1, **Lithium** hexafluoroarsenate
33454-82-9, **Lithium** triflate 35363-40-7, Ethyl
propyl carbonate, uses 56525-42-9, Methyl propyl carbonate, uses
90076-65-6 131651-65-5, **Lithium**
perfluorobutanesulfonate
(**electrolyte** for **lithium battery** to
reduce overcharge and improve electrochem. characteristics)

IT **126-58-9DP**, Dipentaerythritol, reaction product with
ε-caprolactone 502-44-3DP, ε-Caprolactone,
reaction product with dipentaerythritol 609772-45-4P
(**electrolyte** for **lithium battery** to
reduce overcharge and improve electrochem. characteristics)

IT **56-81-5**, Glycerol, uses **67-71-0**, Methyl sulfone
77-77-0, Vinyl sulfone **79-10-7D**, Acrylic acid,
ω-fatty acid esters C2-C21 **79-41-4D**, Methacrylic
acid, ω-fatty acid esters C2-C21 94-36-0, Benzoyl peroxide,
uses 104-92-7, 4-Bromoanisole 105-64-6, Diisopropyl peroxy
dicarbonate 105-74-8, Lauroyl peroxide 126-33-0, Tetramethylene

sulfone **127-63-9**, Phenyl sulfone 149-32-6, Erythritol
452-10-8, 2,4-Difluoroanisole 456-49-5, 3-Fluoroanisole
459-60-9, 4-Fluoroanisole **620-32-6**, Benzyl sulfone
623-12-1, 4-Chloroanisole 1561-49-5, Dicyclohexyl peroxy
dicarbonate 1712-87-4, m-Toluoyl peroxide 2398-37-0,
3-Bromoanisole 2845-89-8, 3-Chloroanisole 3006-82-4,
tert-Butylperoxy-2-ethyl-hexanoate 14666-78-5 15520-11-3,
Bis(4-tert-butylcyclohexyl)peroxy dicarbonate 28452-93-9,
Butadiene sulfone 32752-09-3, Isobutyl peroxide 92177-99-6,
3,3,5-Trimethylhexanoyl peroxide 93343-10-3, 3,5-Difluoroanisole
202925-08-4, 3-Chloro-5-fluoroanisole 609365-67-5
(**electrolyte** for **lithium battery** to
reduce overcharge and improve electrochem. characteristics)

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